SAMSUNG

DIGITAL VERSATILE DISC PLAYER

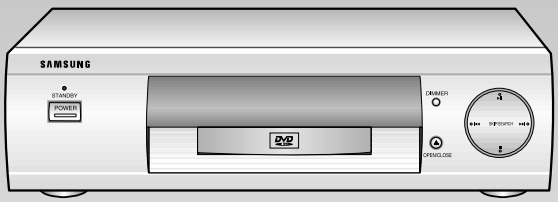
DVD-907/927/807/707

SERVICE Manual

DIGITAL VERSATILE DISC PLAYER

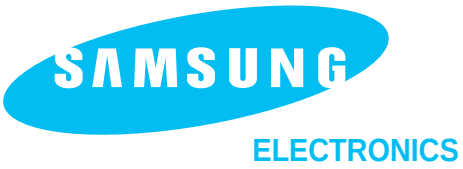
DVD-907/807/707

DVD-927



CONTENTS

1. Precautions
2. Reference Information
3. Product Specification
4. Operating Instructions
5. Disassembly and Reassembly
6. IC Descriptions
7. Circuit Descriptions
8. Troubleshooting
9. Exploded Views and Parts List
10. Packing Diagram
11. Electrical Parts List
12. Block Diagram
13. PCB Diagrams
14. Wiring Diagram
15. Schematic Diagrams



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1. Precautions

1-1 Safety Precautions

1. Before returning an instrument to the customer, always make a safety check of the entire instrument, including, but not limited to, the following items:

(1) Be sure that no built-in protective devices are defective or have been defeated during servicing. (1)Protective shields are provided to protect both the technician and the customer. Correctly replace all missing protective shields, including any remove for servicing convenience. (2) When reinstalling the chassis and/or other assembly in the cabinet, be sure to put back in place all protective devices, including, but not limited to, nonmetallic control knobs, insulating fishpapers, adjustment and compartment covers/shields, and isolation resistor/capacitor networks. Do not operate this instrument or permit it to be operated without all protective devices correctly installed and functioning.

(2) Be sure that there are no cabinet openings throught which adults or children might be able to insert their fingers and contact a hazardous voltage. Such openings include, but are not limited to, excessively wide cabinet ventilation slots, and an improperly fitted and/or incorrectly secured cabinet back cover.

(3) Leakage Current Hot Check-With the instrument completely reassembled, plug the AC line cord directly into a 120V AC outlet. (Do not use a isolation transformer during this test.) Use a leakage current tester or a metering system that complies with American National Standards institute(ANSI) C101.1 Leakage Current for Appliances and Underwriters Laboratories (UL) 1270 (40.7). With the instrument's AC switch first in the ON position and then in the OFF position, measure from a known earth ground (metal waterpipe, conduit, etc.) to all exposed metal parts of the instrument (antennas, handle brackets, metal cabinets, screwheads, metallic overlays, control shafts, etc.), especially any exposed metal parts that offer an electrical return path to the chassis.

Any current measured must not exceed 0.5 millamp. Reverse the instrument power cord plug in the outlet and repeat the test. See Figure 1-1.

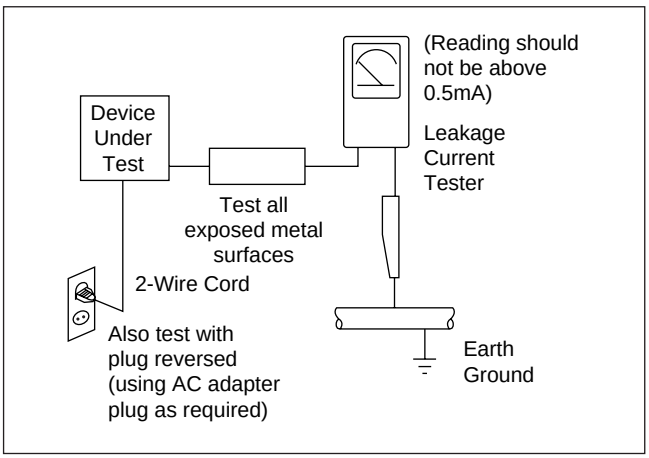

(Reading should not be above 0.5mA)
Device Under Test
Leakage Current Tester
Test all exposed metal surfaces
2-Wire Cord
Also test with plug reversed (using AC adapter plug as required)
Earth Ground

Fig. 1-1 AC Leakage Test

Any measurements not within the limits specified herein indicate a potential shock hazard that must be ellminated before returning the instrument to the customer.

(4) Insulation Resistance Test Cold Check-(1) Unplug the power supply cord and connect a jumper wire between the two prongs of the plug. (2) Turn on the power switch of the instrument. (3) Measure the resistance with an ohmmeter between the jumpered AC plug and all exposed metallic cabinet parts on the instrument, such as screwheads, antenna, control shafts, handle brackets, etc. When an exposed metallic part has a return path to the chassis, the reading should be between 1 and 5.2 megohm. When there is no return path to the chassis, the reading must be infinite. If the reading is not within the limits specified, there is the possibility of a shock hazard, and the instrument must be repared and rechecked before it is returned to the customer. See figure 1-2.

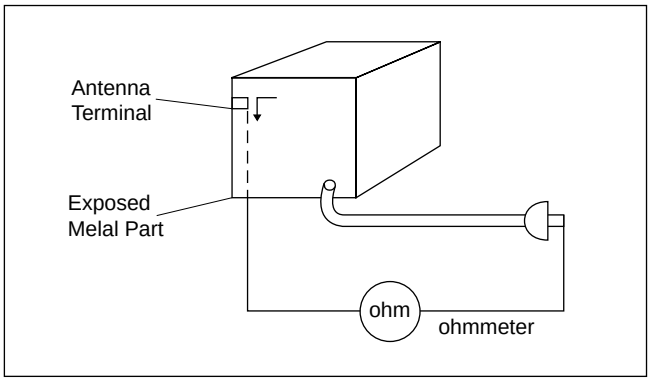


Fig.1-2 Insulation Resistance Test

2. Read and comply with all caution and safety related notes non or inside the cabinet, or on the chassis.

3. Design Afteration Warning-Do not alter of add to the mechanical or electrical design of this instrument. Design alterations and additions, including but not limited to, circuit modifications and the addition of items such as auxiliary audio output connections, might alter the safety characteristics of this instrument and create a hazard to the user. Any design alterations or additions will make you, the servicer, responsible for personal injury or property damage resulting therefrom.

4. Observe original lead dress. Take extra care to assure correct lead dress in the following areas:(1) near sharp edges, (2) near thermally hot parts (be sure that leads and components do not touch thermally hot parts), (3) the AC supply, (4) high voltage, and (5) antenna wiring. Always inspect in all areas for pinched, out-of-place, or frayed wiring, Do not change spacing between a componect and the printed-circuit board. Check the AC power cord for damage.

5. Components, parts, and/or wiring that appear to have overheated or that are otherwise damaged should be replaced with components, parts and/or wiring that meet original specifications. Additionally, determine the cause of overheating and/or damage and, if necessary, take corrective action to remove any potential safety hazard.

6. Product Safety Notice-Some electrical and mechanical parts have special safety-related characteristics which are often not evident from visual inspection, nor can the protection they give necessarily be obtained by replacing them with components rated for higher voltage, wattage, etc. Parts that have special safety characteristics are identified by shading, an (⚹)or a (⚠)on schematisc and parts lists. Use of a substitute replacement that does not have the same safety characteristics as the recommended replacement part might created shock, fire and/or other hazards. Product safety is under review continuously and new instructions are issued whenever appropriate.

1-2 Servicing Precautions

CAUTION: Before servicing Instruments covered by this service manual and its supplements, read and follow the Safety Precautions section of this manual.

Note: If unforseen circument create conflict between the following servicing precautions and any of the safety precautions, always follow the safety precautions. Remember: Safety First.

1-2-1 General Servicing Precautions

(1) a. Always unplug the instrument's AC power cord from the AC power source before (1) removing or reinstalling any component, circuit board, module or any other instrument assembly, (2) disconnecting any instrument electrical plug or other electrical connection, (3) connecting a test substitute in parallel with an electrolytic capacitor in the instrument.

b. Do not defeat any plug/socker B+ voltage interlocks with which instruments covered by this service manual might be equipped.

c. Do not apply AC power to this instrument and/or any of its electrical assemblies unless all solid-state device heat sinks are correctly installed.

d. Always connect a test instrument's ground lead to the instrument chassis ground before connecting the test instrument positive lead. Always remove the test instrument ground lead last.

Note: Refer to the Safety Precautions section ground lead last.

(2) The service precautions are indicated or printed on the cabinet, chassis or components. When servicing, follow the printed or indicated service precautions and service materials.

(3) The components used in the unit have a specified flame resistance and dielectric strength. When replacing components, use components which have the same retings. Components identified by shading, by(⋇) or by (⚠) in the circuit diagram are important for safety or for the characteristics of the unit. Always replace them with the exact replacement components.

(4) An insulation tube or tape is sometimes used and some components are raised above the printed wiling board for safety. The internal wiring is sometimes clamped to prevent contact with heating components. Install such elements as they were.

(5) After servicing, always check that the removed screws, corponents, and wiring have been installed correctly and that the portion around the serviced part has not been damaged and so on. Further, check the insulation between the blades of the attachment plug and accessible conductive parts.

1-2-2 Insulation Checking Procedure

Disconnect the attachment plug from the AC outlet and turn the power ON. Connect the insulation resistance meter (500V) to the blades of the attachment plug. The insulation resistance between each blade of the attachment plug and accessible conductive parts(see note) should be more than 1 Megohm.

Note: Accesible conductive parts include metal panels, input terminals, earphone jacks, etc.

1-3 ESD Precautions

Electrostatically Sensitive Devices (ESD)

Some semiconductor (solid state) devices can be damaged easily by static electricity.
Such components commonly are called Electro statically Sensitive Devices(ESD). Examples of typical ESD devices are integrated circuits and some fieldeffect transistors and semiconductor chip components. The following techniques should be used to help reduce the incidence of component damage caused by static electricity.

(1) Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic aharge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed for potential shock reasons prior to applying power to the unit under test.

(2) After removing an electrical assembly equipped with ESD devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.

(3) Use only a grounded-tip soldering iron to solder or unsolder ESD devices.

(4) Use ouly an anti-static solder removal devices. Some solder removal devices not classified as “anti-static” can generate electrical charges sufficient to damage ESD devices.

(5) Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damge ESD devices.

(6) Do not remove a replacement ESD device from its protective package until immediately before your are ready to install it.(Most replacement ESD devices are packaged with leads electrically shorted together by condutive foam, aluminum foil or comparable conductive materials).

(7) Immediately before removing the protective materials from the leads of a replacement ESD device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

CAUTION: Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

(8) Minimize bodily motions when handling unpackaged replacement ESD devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electrictity suffcient to damage an ESD device).

1-4 Handling the optical pick-up

* The laser diode in the optical pick up may suffer electrostatic breakdown because of potential static electricity from clothing and your body.

The following method is recommended.

(1) Place a conductive sheet on the work bench (The black sheet used for wrapping repair parts.)
(2) Place the set on the conductive sheet so that the chassis is grounded to the sheet.
(3) Place your hands on the conductive sheet(This gives them the same ground as the sheet.)
(4) Romove the optical pick up block
(5) Perform work on top of the conductive sheet. Be careful not to let your clothes or any other static sources to touch the unit.

* Be sure to put on a wrist strap grounded to the sheet.
* Be sure to lay a conductive sheet made of copper etc. Which is grounded to the table.

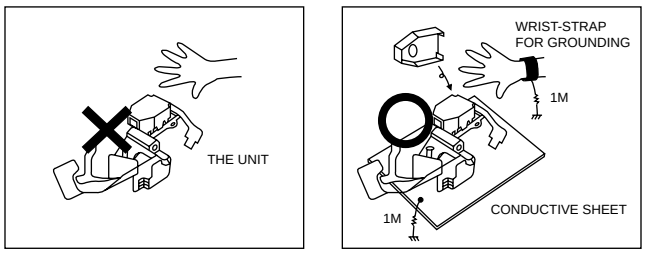


Fig.1-3

(6) Short the short terminal on the PCB, which is inside the Pick-Up ASS'Y, before replacing the Pick-Up. (The short terminal is shorted when the Pick-Up Ass'y is being lifted or moved.)
(7) After replacing the Pick-up, open the short terminal on the PCB.

1-5 Pick-up disassembly and ressembly

1-5-1 Disassembly

1) Remove the power cable.
2) Switch LD SW3 on deck PCB to ‘S’ before removing the FPC
   (inserted into Main PCB CN1. See Fig 1-4.)
3) Disassemble the deck.
4) Disassemble the deck PCB.
5) Replace the Pick-up.

1-5-2 Assembly

1) Replace the Pick-up.
2) Assemble the deck PCB.
3) Reassemble the deck.
4) Switch LD SW3 on deck PCB to ‘O’ and insert FPC into Main PCB CN1 (See Fig 1-4).

Note : If the assembly and disassembly are not done in correct sequence, the Pick-up may be damaged.

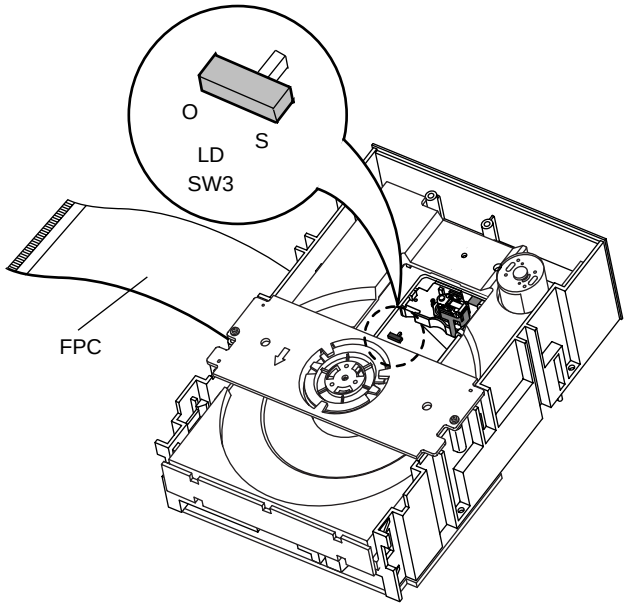


Fig. 1-4

2. Reference Information

2-1 Semiconductor Base Diagram

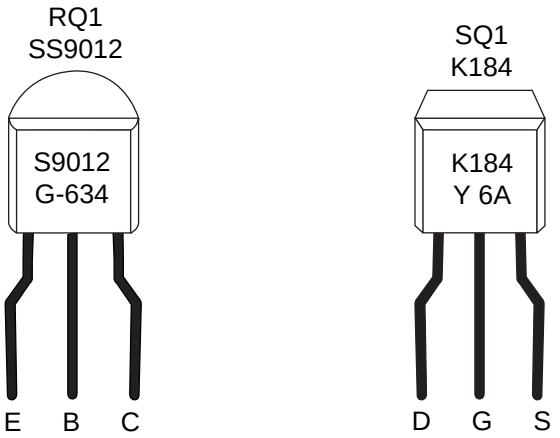


Fig. 2-1

2-2 Chip Replacement

2-2-1 Precaution for the chip Replacement

1) Do not touch the part body directly with the soldering iron. ICs, especially TSOP, are easily damaged by heat.
2) Use care regarding soldering iron tip and avoid repidly heating parts. Some parts can be damaged by sudden heating. Preheat the part at about 100°… for several minutes before installing it.
3) Use soldering tip temperature of about 240°… or larger parts, use a slightly higher temperature (about 280°…).
4) The thin(0.3mm)solder for miniature parts does not contain adequate flux. Supplementary flux is thus needed in most cases.
5) Use care not to damage the circuit pattern, especially when removing.
6) Because of the many pins, cleanliness of the pattern is extremely important after removing the IC.
7) Use care to avoid solder bridges. Remove any that occurs.
8) Position the part carefully. They will also affect the soldering operation. Be very precise in positioning the IC. Soldering opposite pins first holds the IC in place and makes soldering the other pins easier.
9) Do not reuse removed parts.
10) Check for solder joints, especially miniature parts with small lead.
11) A defective trimming resistor cannot be adjusted externally. Replace with an ordjnary variable resistor.
12) It is important to inspect the work with a magnifier. Check after installing (cold solder joints, etc.).

2-2-2 Tools for the Chip Replacement

The tools for the chip replacement are as follows:

1) Thin tip type soldering iron
2) Small flat-blade tip-type soldering iron
3) Special desoldering tip iron
4) Airblower unit
5) Flat Package Pick-up
6) Flux can be cleaned by water
7) 0.3mm thin solder can be cleaned by water
8) Desoldering wire
9) Tweezers

2-2-3 Chip Resistors and Chip Capacitors

-- Kind of the Part

The kind of chip resistors and chip capacitors as follows:d

1) Think Film Chip Resistors
2) Carbon Film Chip Resistors
3) Metal Film Chip Resistors
4) Chip Ceramic Capacitors
5) Chip Trimming Resistors

-- Removing the Part

1) Using two soldering irons:
   Use thin tip soldering irons.
① Use soldering tip temperature of about 280°….
② Simultaneously heat both ends of the part.
③ While heating, grasp the part with the tips of the
④ soldering irons and remove it.
   Use desoldering wire to completely remove the old
⑤ solder from the part location of the board.
   A clean pattern for installing the new part is very
⑥ important.

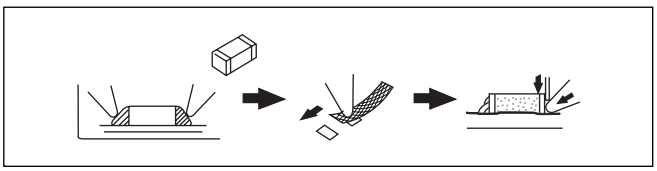


Fig 2-2

-- Installing the Part

1) Use desoldering wire to remove the previous solder.
2) Clean the location.
3) Apply flux.
4) Position the IC and solder two pins at opposite sides.
5) Use a sharp tipped soldering iron and carefully solder each Pin.(After gaining experience, a thicker tip can be used for better work efficiency.)
6) Remove any solder bridges with desoldering wire.
7) Inspect the work with a magnifier.

2-2-4 Diodes and Tr.

-- Kind of the Part
The kind of the part is as follows:
1) Chip VRs.
2) Chip Trimmer Capacitors
3) Diode
4) Transistors

-- Removing the Part
1) Using two soldering irons:
① Use small flat-blade tips.
② Heat the leads of the part simultaneously.
③ When the solder melts, grasp and remove the part with the soldering iron tips.
④ Remove the old solder with desoldering wire.

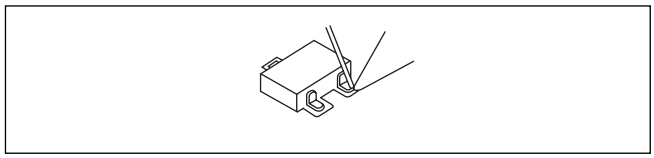


Fig 2-3

-- Installing the Part
1) Clean the area where the new part is to be mounted.
2) Apply flux.
3) Set part correctly into position, prevent it from shifting.
4) Use sharp soldering iron tip. Bring close to the part contact without actually touching it. Melt thin solder between the tip and part si that it flows into the part contact.

2-2-5 Chip ICs

-- The kind of the Chip ICs
The kind of the chip ICs are as follows:
1) SOP(Small Outline Package)IC
2) SSOP(Shrink Small Outline Package)IC
3) VSOP(Very Small Outline Package)IC
4) QFP(Quad Flat Package)IC
5) VQFP(Very Quad Flat Package)IC
6) PLCC(Plastic Leaded Chip Carrier)IC
7) TSOP(Thin Small Outline Package)IC

-- Removing the Part
1) Using special desoldering iron:
① Selet the tip according to the size and shape of the IC.
② "Tin" the tip with a small amount of the IC leads.
③ Set the tip squarely over the IC leads.
④ When the solder melts, carefully twist the iron.
⑤ Raise and remove the IC.

2) Using shaped airblower unit:
① Select the correct nozzle.
② Select the temperature and airblow(suggested: temperature:7, airblow:4)
③ Engage the IC removing tool.
④ Use the airblow to preheat the IC for about 5 seconds, then heat with the nozzle until the IC remover lifts the part from the board.

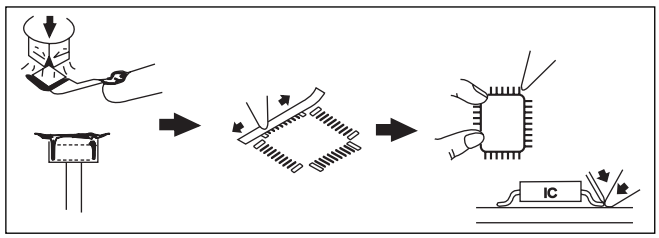


Fig 2-4

-- Installing the Part
1) Use desoldering wire to remove the previous solder.
2) Clean the location.
3) Apply flux.
4) Position the IC and solder two pins at opposite sides.
5) Use a sharp tipped soldering iron and carefully sol der each Pin.(After gaining experience, a thicker tip can be used for better work efficiency.)
6) Remove any solder bridges with desoldering wire.
7) Inspect the work with a magnifier.

MEMO

3. Product Specification

General

Power Requirements		AC 120V/60Hz
Power Consumption		18W
Weight	DVD-907	4.1Kg
	DVD-927	4.4Kg
Set Size(WDH : mm)	DVD-907	420 X 333 X 80
	DVD-927	420 X 333 X 108
Operating Temperature Range		+5¡ ~ +35¡
Operating Humidity Range		10% ~ 75%

Disc Played

DVD(Digital Versatile Disc)	Reading Speed	3.49m/sec
	Aprox. Play Time (Single Sided, Single Layer Disc)	135minutes
CD(Compact Disc):12cm	Reading Speed	1.2~1.4m/sec
	Maximum Play Time	74minutes
CD(Compact Disc):8cm	Reading Speed	1.2~1.4m/sec
	Maximum Play Time	20minutes
Video-CD	Reading Speed	1.2~1.4m/sec
	Maximum Play Time	74minutes (Video+Audio)

Video Output Level (75§ load)

RCA Jack	Comoposite	1.0Vp-p
	Y	1.0Vp-p
	Pr	0.70Vp-p
	Pb	0.70Vp-p
Scart Jack	R(Red)	0.714Vp-p
	G(Green)	0.714Vp-p
	B(Blue)	0.714Vp-p
	Composite	1.0Vp-p
S-Video	Luminance Signal	1Vp-p
	Color Signal	0.286Vp-p

Video outputs

	Europe	North America Middle America Korea	South America	China Russia East-Soth Asia
CVBS	2	2	2	2
Y/C	1	1	1	1
Y, Pr, Pb		1set	1set	1set
R,G,B(SCART)	1set			
TV mode Selection	NTSC PAL SECAM	NTSC	NTSC PAL-M PAL-N	NTSC PAL SECAM

Audio Output Level

Analog	Stereo (RCA Jack)	2Vrms(1KHz)(50K§)
	Stereo (Scart Jack)	2Vrms(1KHz) (50K§)
	Dolby Digital 5.1 ch. Analog Output	2Vrms(1KHz) (50K§)
Digital	Coaxial	0.5Vp-p (75§)
	Optical	

Audio Characteristics

Frequency Response	48KHz Sampling	4Hz ~ 22KHz
	96KHz Sampling	4Hz ~ 44KHz
S/N Ratio		100dB
Dynamic Range		96dB
THD(Total Harmonic Distortion)		0.005%
Wow and Flutter		Under the limited value of measuring

4. Operating Instructions

4-1 Remote Control

4-1-1 Basic Operations

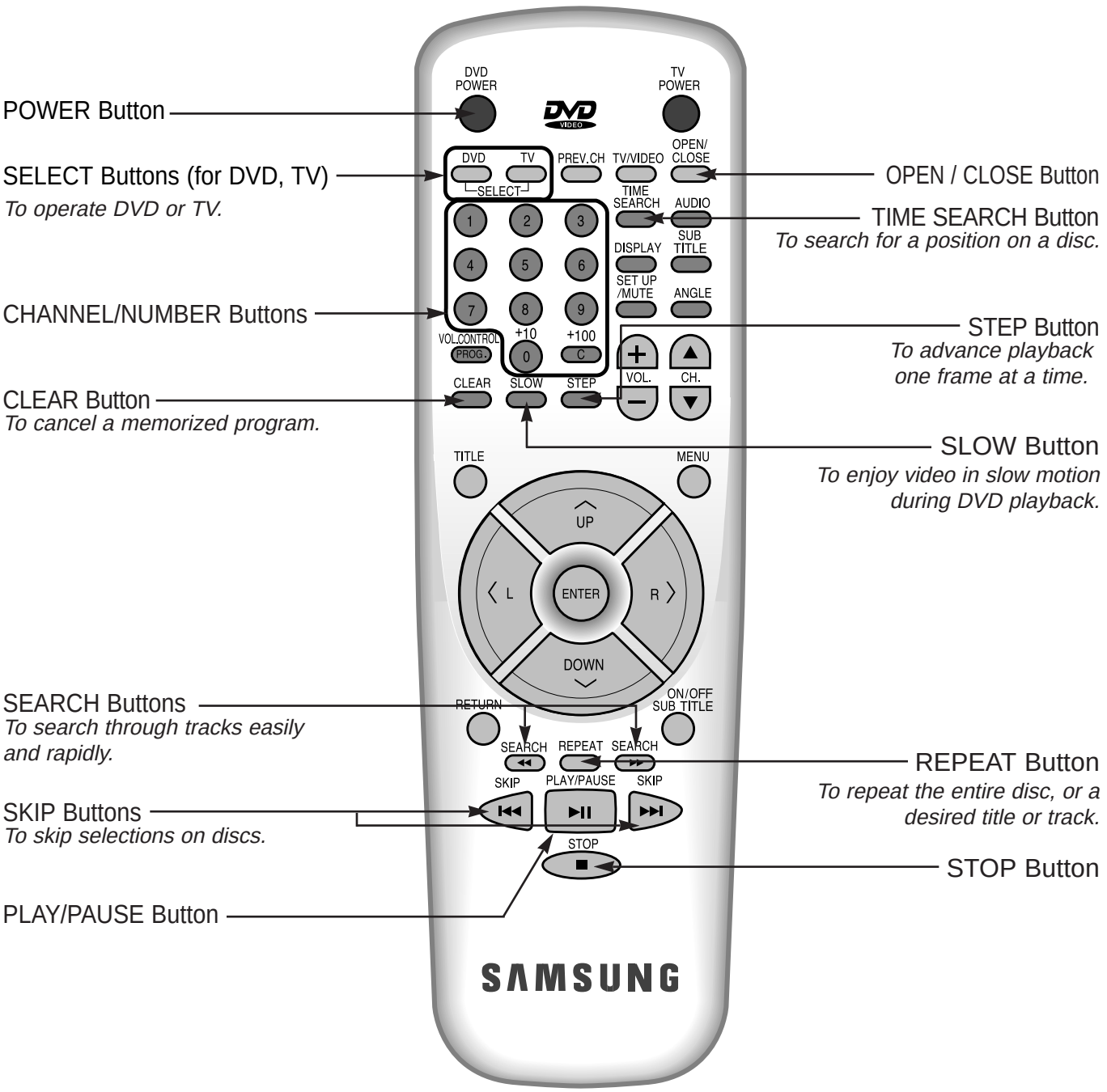


fig 4-1

4-1-2 Button for DVD/TV

DISPLAY Button
To see the current DISC mode.

SET UP/MUTE Selector
To bring up the setup menu or to mute the TV sound temporarily.

VOL.CONTROL Button
To control the sound volume of analog AC-3 output.

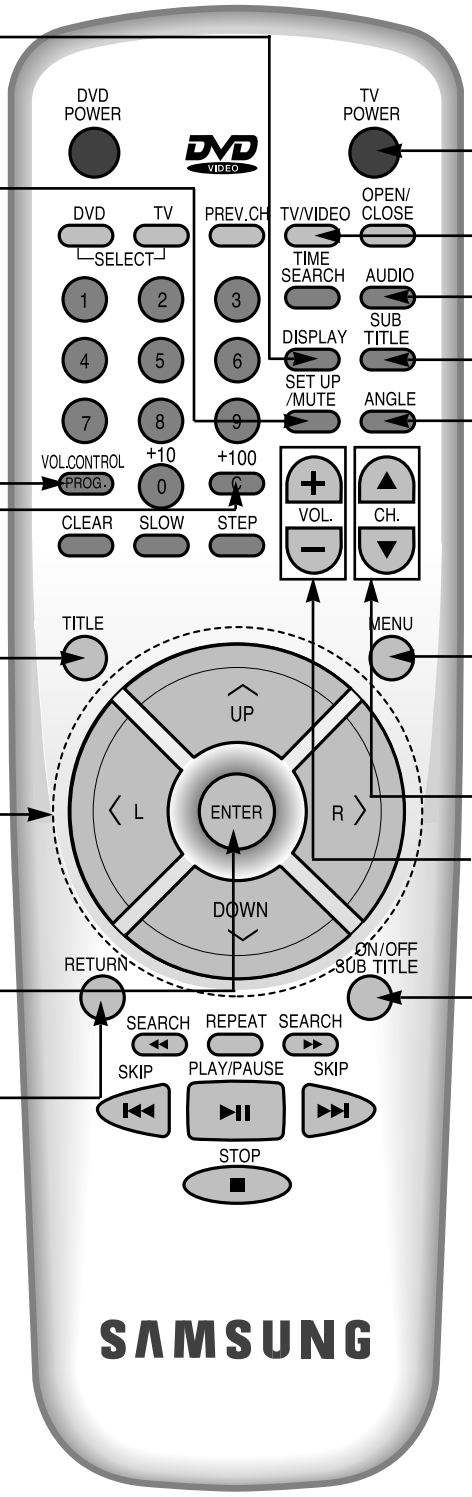
CHAPTER Button
To search chapters.

TITLE Button

DIRECTION Buttons
When using the menus, press these buttons when you want to move to desired position.

ENTER Button
To play a selected title.

RETURN Button
To return to a previous menu.



TV POWER Button

TV/VIDEO Selector
To select TV or VIDEO.

AUDIO Selector
To select Audio when playing a DVD disc.

SUBTITLE Selector
To select the sub title when playing a DVD disc.

ANGLE Selector
To change the screen angle.

MENU Button
To change audio, subtitle, angle.

CHANNEL Selector

VOLUME CONTROL Button

SUBTITLE Button
To turn subtitles on or off.

fig 4-2

4-2 Use of Menu

4-2-1 Use of Menu on the Disc

- Various Menus are listed on a DVD, and menus differ from disc to disc.
- You can see the menu screen only when a menu is contained on the disc.

4-2-2 Use of Setup Menu

1) Screen Menu Language

You can select the menu language recorded on the disc

If the selected menu language is not recorded on the disc, the original pre-recorded language is selected.

2) Audio Language

If you set up the audio language in advance, you can watch movies with pre-selected audio. You don*t need to set up audio every time you watch a movie.

If the selected audio language is not recorded on the disc, the original pre recorded audio language is selected.

3) Subtitle Language

If you set up the subtitle language in advance, it will come up automatically every time you watch a movie.

If the selected subtitle is not recorded on the disc, the original pre-recorded Subtitle is selected.

4) Screen Angle Mark

This function allows you to turn the screen angle mark on or off in order to view various screen angles.

If your DVD disc is encoded with screen angles, angle mark will be displayed when the screen angle mark is set to *ON*

5) Parental Level

The Parental Level control allows users to set the level necessary to prevent children from viewing unsuitable movies such as those with violence, adult subject matter, etc. ... There are up to 8 parental levels on a disc and they can be used to prevent the viewing of certain movies. For Example, Level 1 is the "Kids Safe" level and is the most restrictive. Only youth oriented movies will be played back when the player is set to Level 1. Level 8 is the "Adult" level and is the least restrictive. All types of movies will play when the player is set to this level.

The Parental Level Control function is compatible only with parental level encoded discs.

If you forget your password, press the CLEAR button 3 times successively while in the *ENTER PASSWORD*

1111 is the original password that has been encrypted in the player by the manufacturer.

6) Screen Ratios

As DVD supplies the screen with a 16:9 ratio, you can decide which type of screen you want to watch.

The Screen Ratio settings depend on What is encoded on the disc.

7) Audio Output

You can configure the digital audio output jack to deliver Dolby Digital (AC-3) Data to any AC-3 decoding amplifier by using the setup menu. If you are not using an AC-3 decoding amplifier, you should configure the audio output as PCM in setup menu.

If you*ve configured the audio output as PCM, the audio output is automatically changed to AC-3 when you set either CENTER or SURROUND in SURROUND SOUND as YES.

If you*ve configured the audio output as PCM, both CENTER and SURROUND in surround sound are automatically changed to NO.

8) Surround Sound

You can configure analog audio output as surround sound or stereo sound using the setup menu. If you*ve selected surround sound output, you should specify the status of your speaker system to hear surround sound suitable for your speaker system.

If you*ve configured the digital audio out as PCM, the selection of *SURROUND SOUND* will not work.

If you have only front left and right speakers, you should set center, surround, subwoofer to *NO*.

If you have front left, front right and center speakers only, you should set the center to *YES*

If you have only front left, front right, center and surround speakers, you should set the center and surround to *YES*

If you have all speakers needed for AC-3, you should set the center, surround and subwoofer to *YES*.

When you have configured the audio output as AC-3 and have set the CENTER of the surround sound to YES, you must have a center speaker connected to hear the dialogue.

4-3 CONNECTION

4-3-1 Basic Connection

1) Connecting to a TV

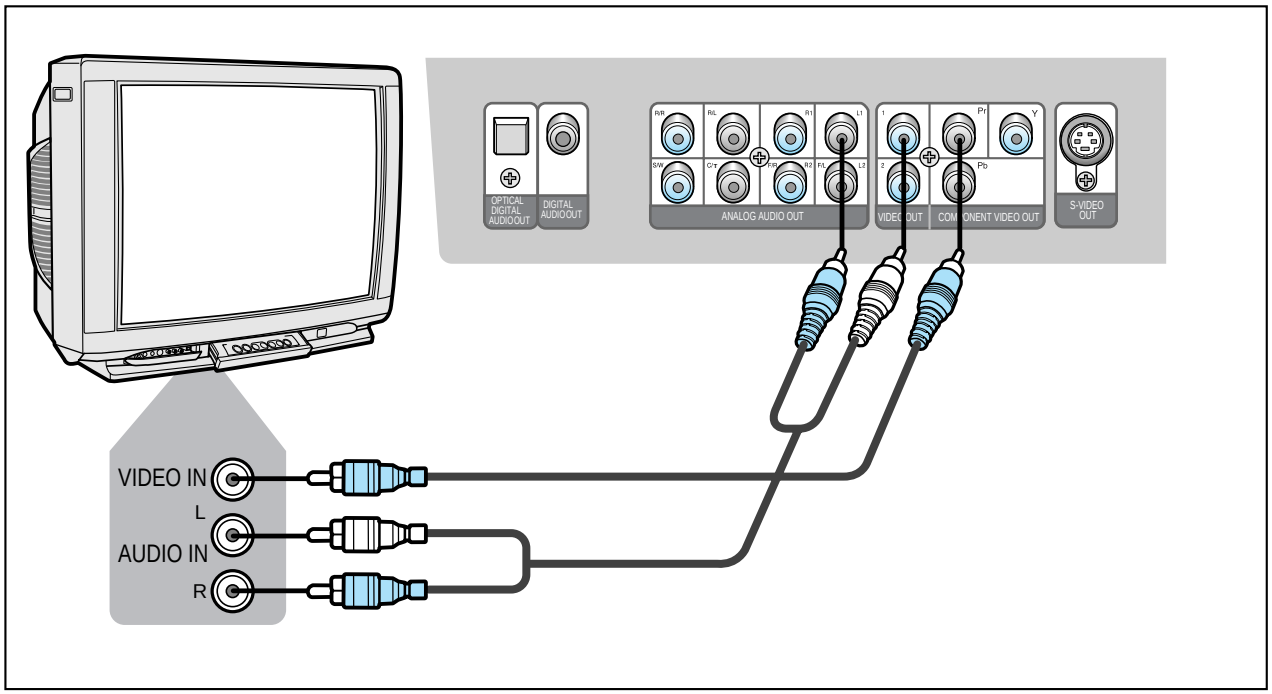


Fig.4-3

2) Connecting to an Audio system

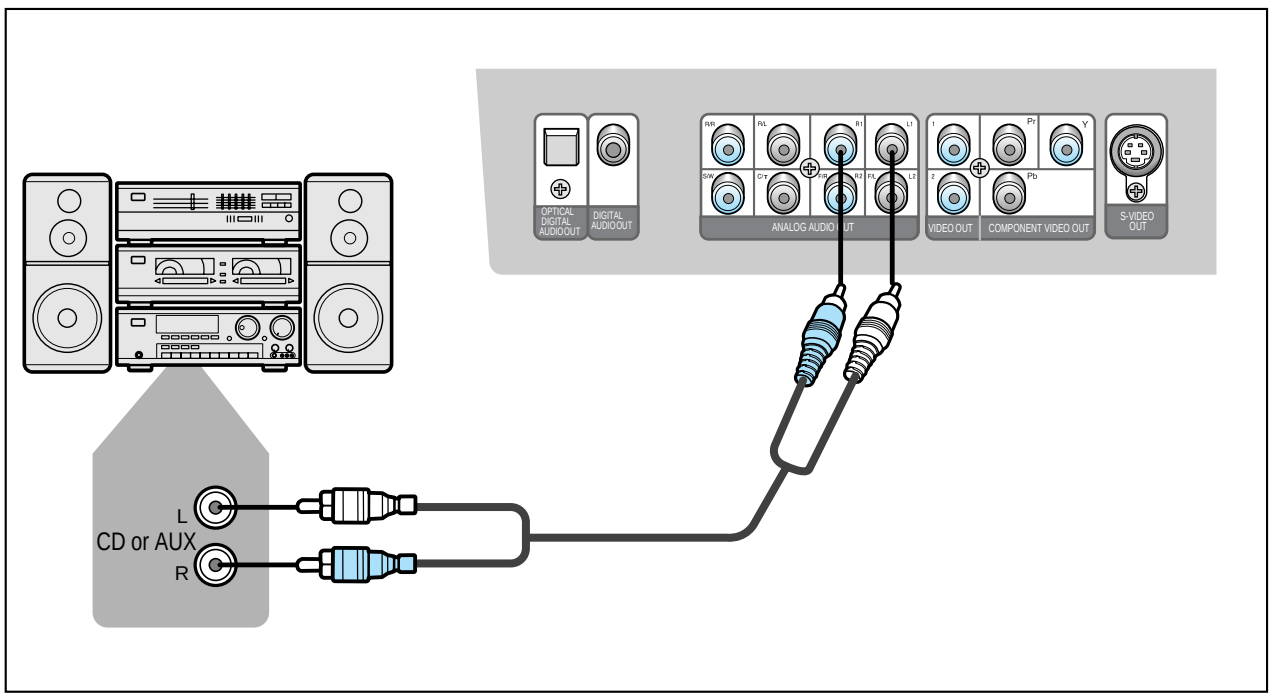


Fig. 4-4

4-3-2 Connections

1) S-VIDEO Connection

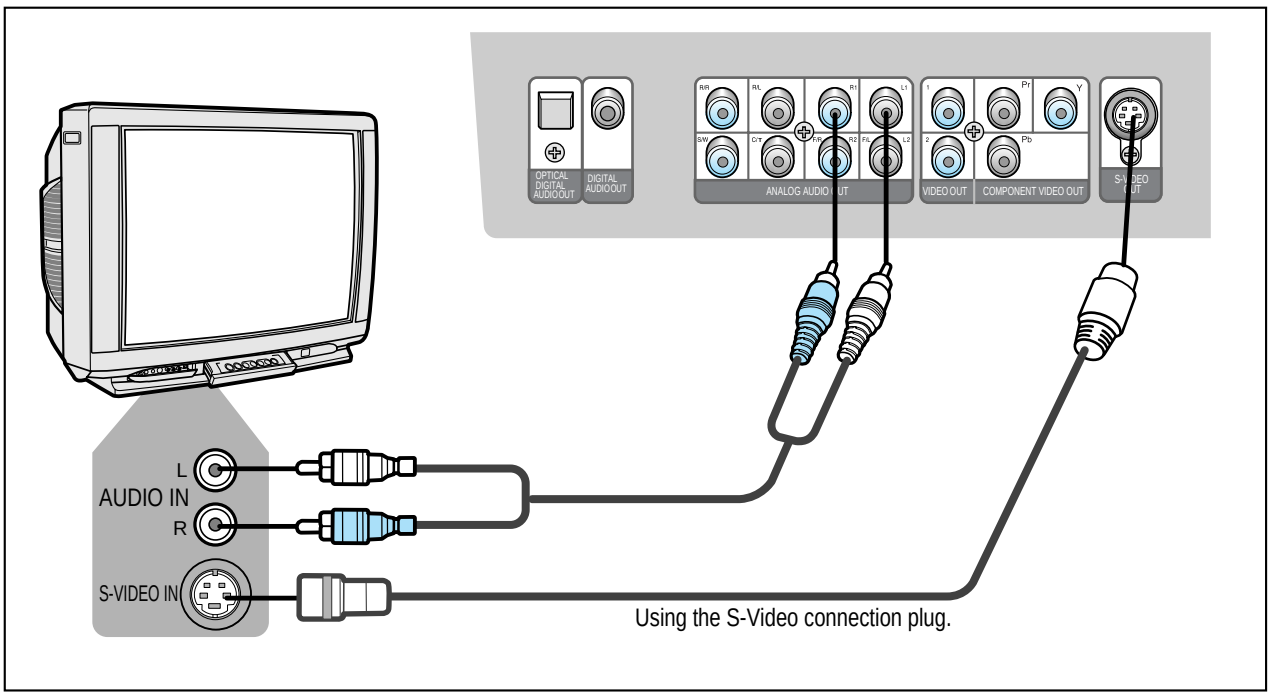


Fig. 4-5

2) AC-3 5.1 channel and Y,Pr,Pb Video connection

- Component signals(Y, Pr, Pb) are output from the Y,Pr,Pb jacks.

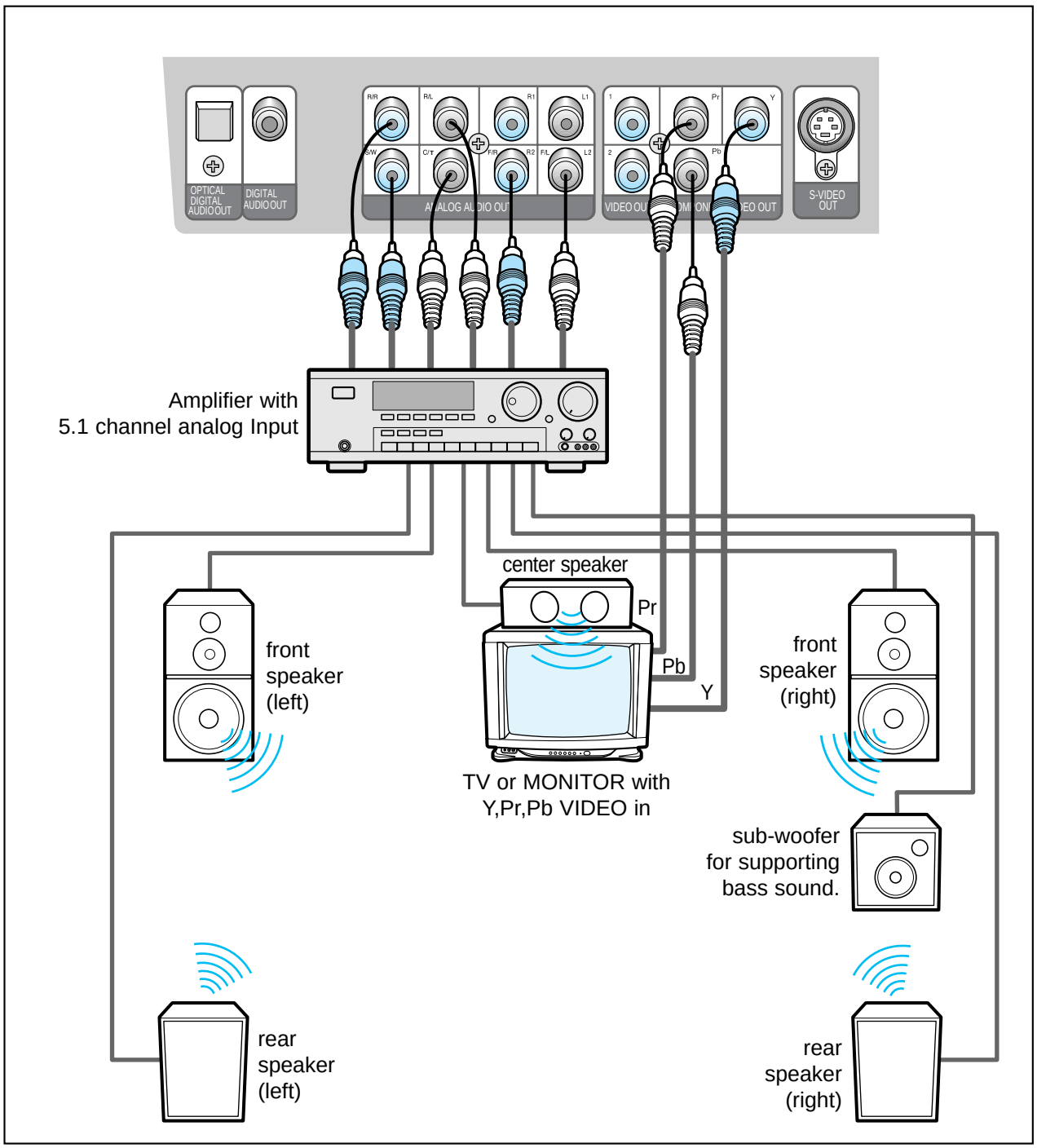


Fig. 4-6

3) AC-3 5.1 channel and S-Video connection

• AC-3 5.1 channel connection.

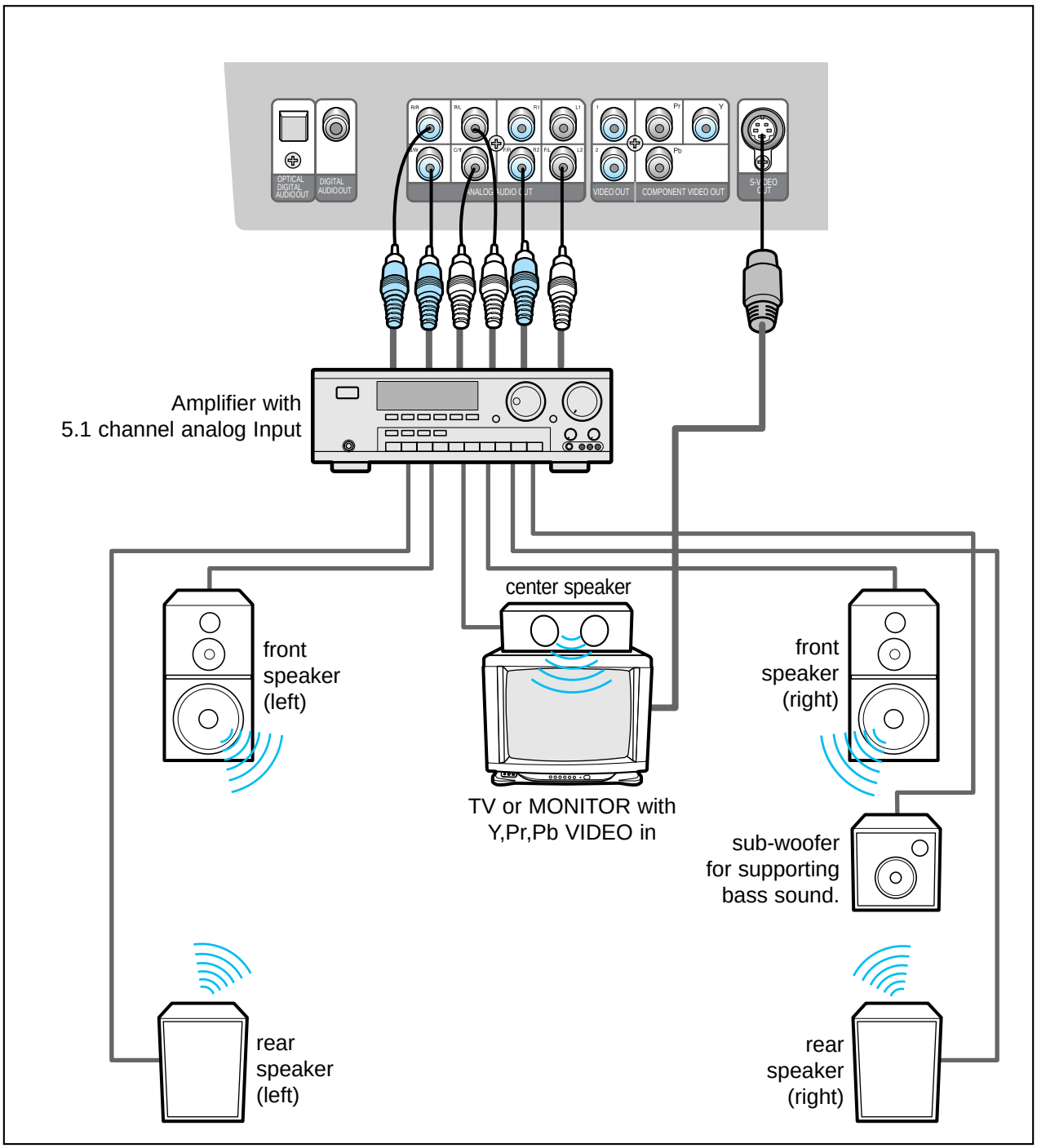


Fig. 4-7

4) Stereo amplifier and S-Video connection. (2 channel)

- Normal stereo amplifier connection, (2 channel)

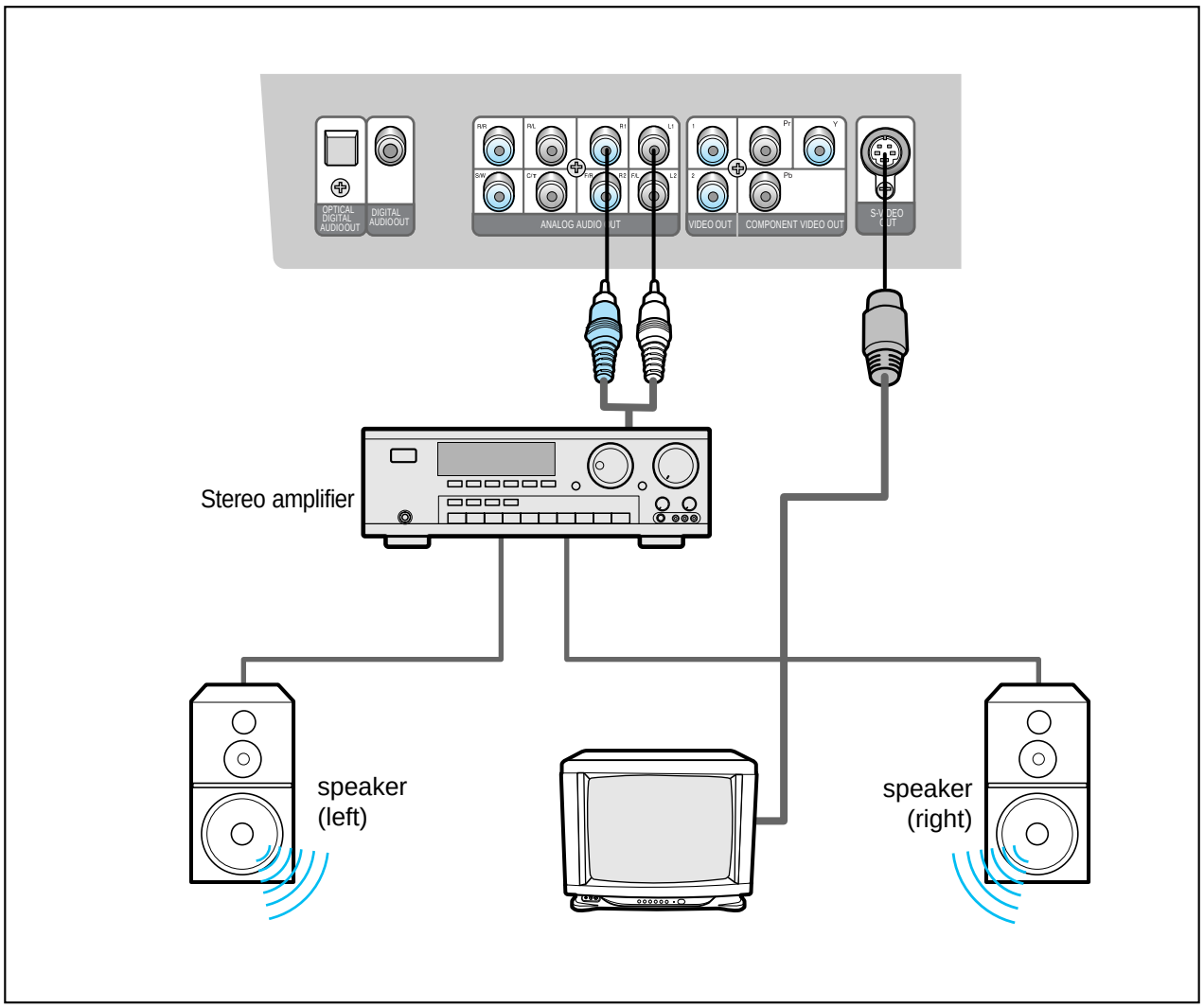


Fig. 4-8

5) Dolby Pro-Logic Connection

- Either the Optical Digital Audio Out, Digital Audio Out or Analog Audiot Out (R/L) should be connected to the Dolby Pro-Logic amplifier.
- The Optical Digital Audio Out and Digital Audio Out both output the same signal.

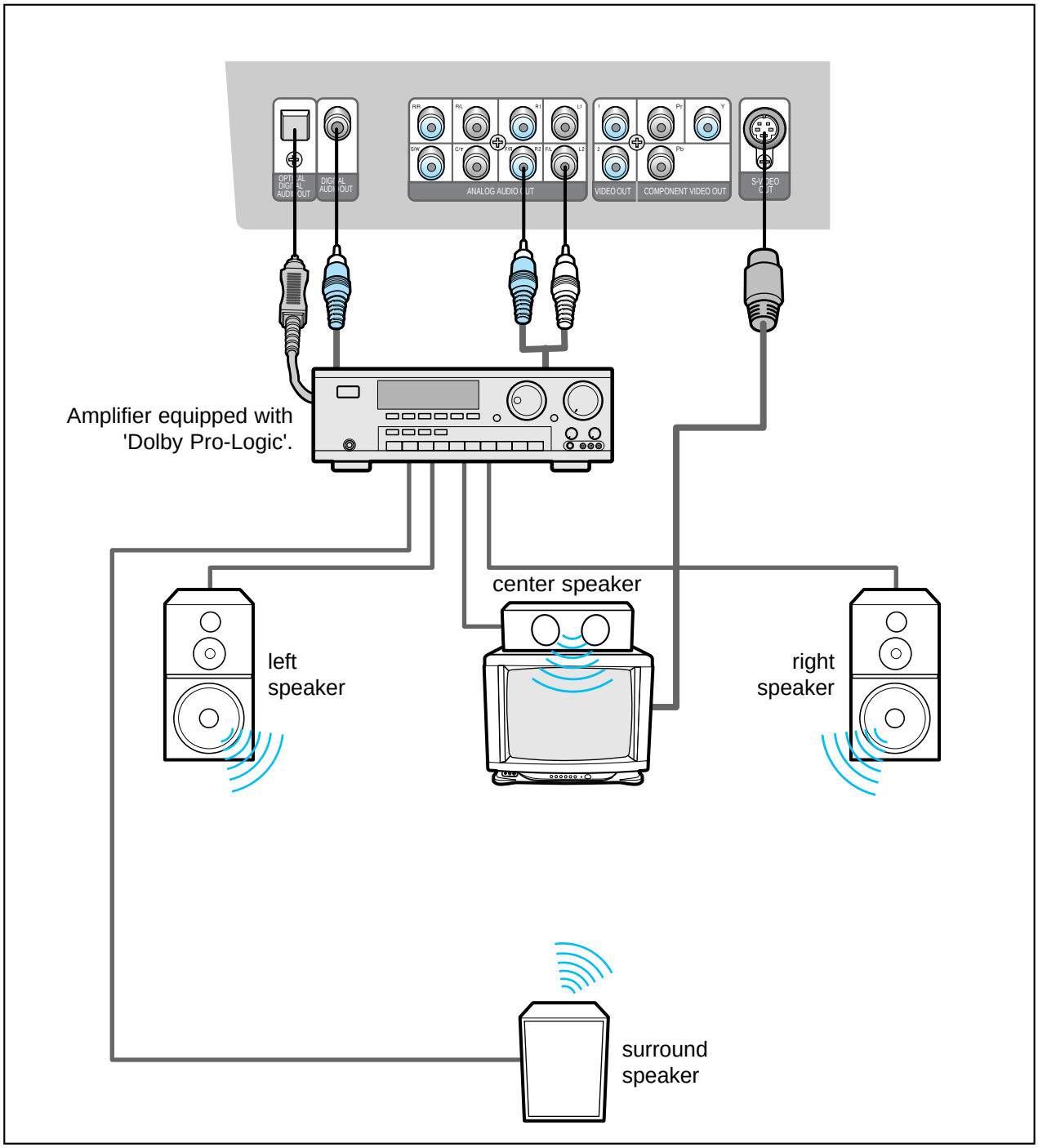


Fig. 4-9

6) AC-3 decoder amplifier digital connection

- Either the Optical Digital Audio Out or the coaxial Digital Audio Out should be connected to the AC-3 decoder amplifier.
- The Optical Digital Audio Out and Digital Audio Out both output the same signal.

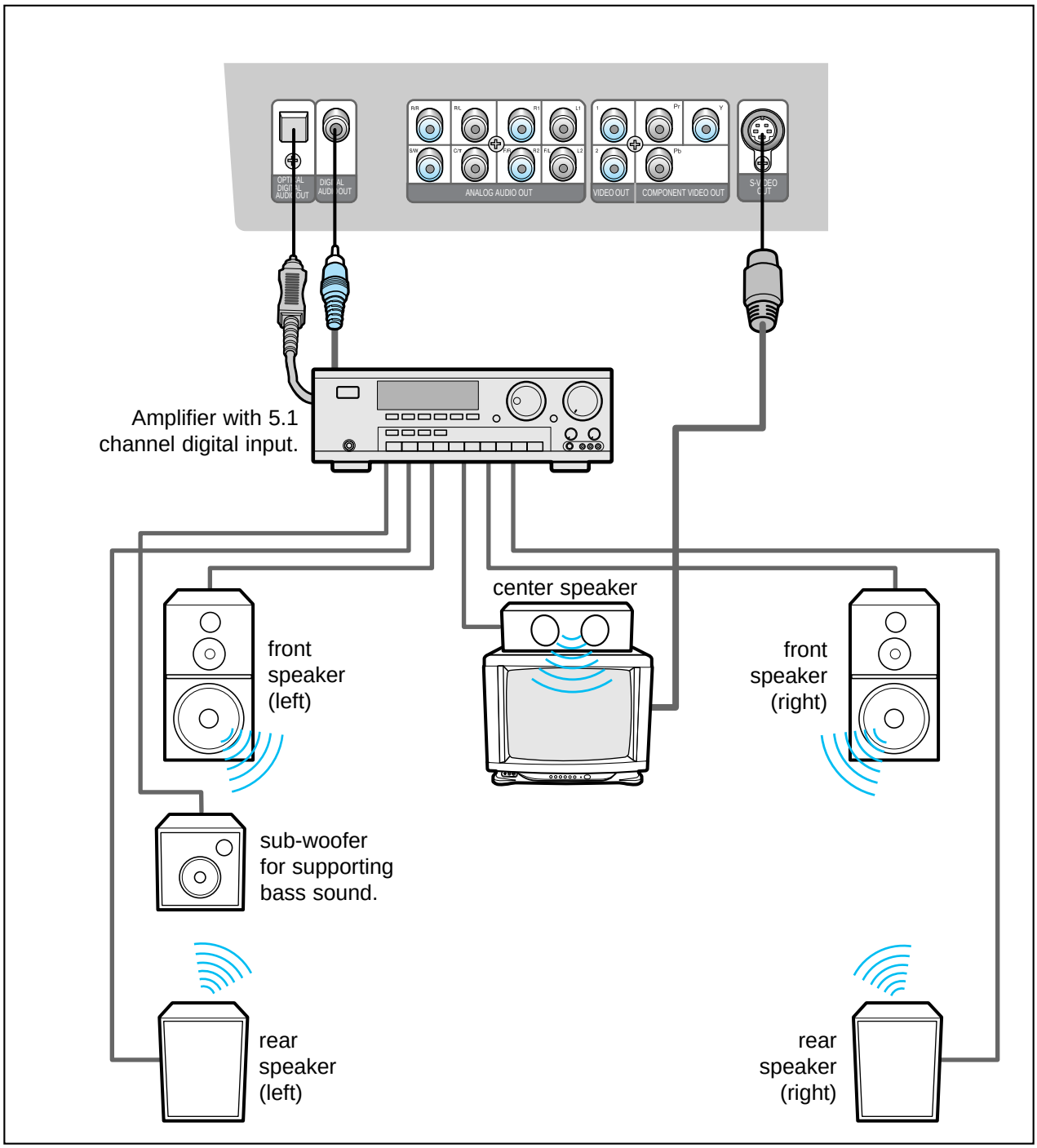


Fig. 4-10

5. Disassembly and Reassembly

5-1 DVD-907/807/707

5-1-1 Exterior and PCB Disassembly

5-1-1(a) Door-tray

1) Supply power and open Tray ❶ .
2) Disassemble the door-tray ❷ in direction of arrow.
3) Close Tray ❶ and power off.

Note : If Tray ❶ doesn't open, insert a clip ❸ into the hole (as shown in detailed drawing), and open Tray ❶ manually.

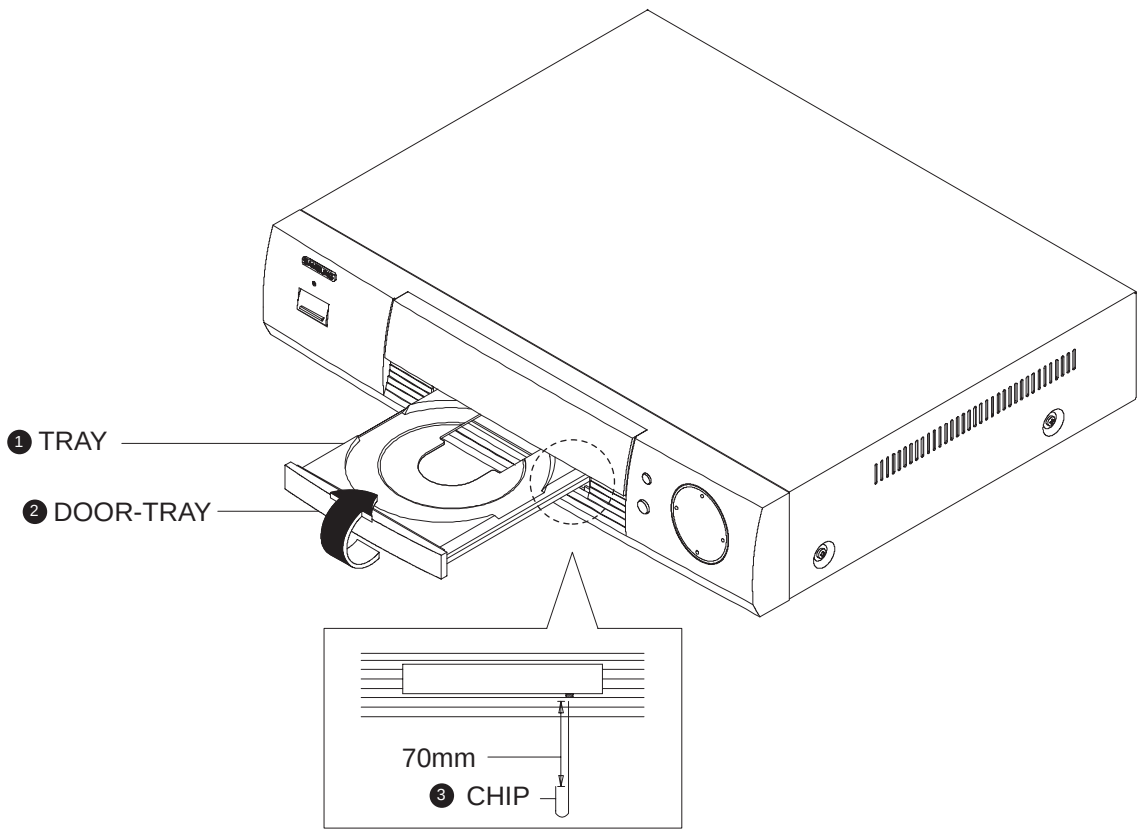


Fig. 5-1

5-1-2(b) Top cabinet

1. Remove 3 screws ❶ on the back panel.
2. Remove 4 screws ❷ , ❸ on the left and right side.
3. Lift up the top cabinet in direction of arrow.

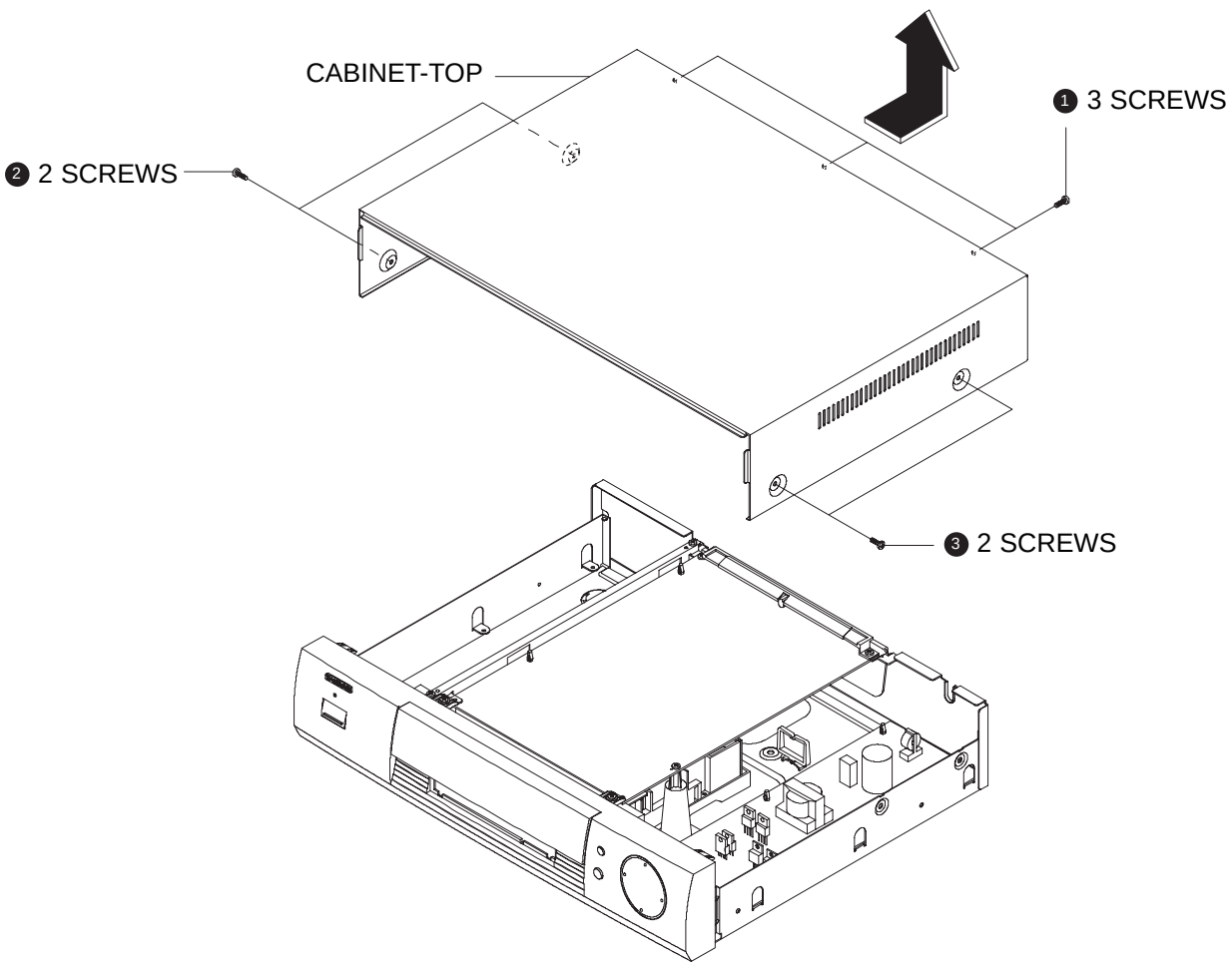


Fig. 5-2

5-1-3(c) Panel-Front, PCB Front

1. Remove 2 screws ❶ , ❷ on the left and right side of panel-front ass'y
2. Remove 2 screws ❸ on the top of cover-panel ass'y and disassemble the front.
3. Remove 2 screws ❹ from PCB-front.
4. Remove 2 hooks to fix PCB-front and disassemble PCB-front.

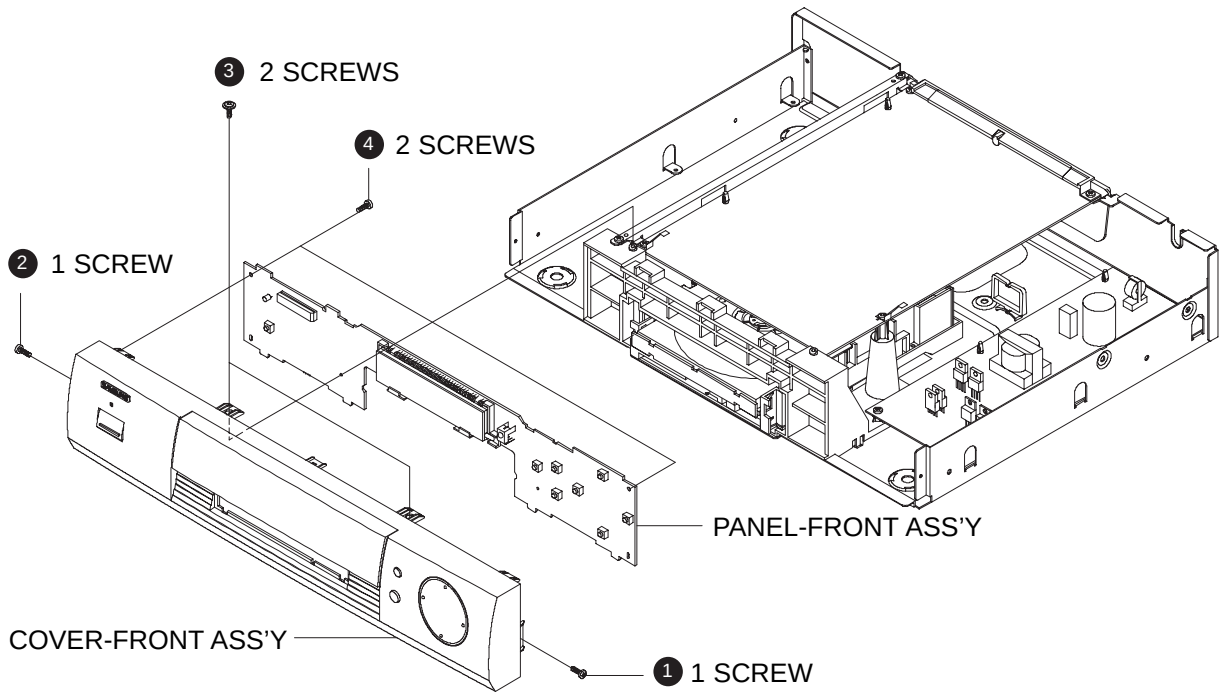


Fig. 5-3

5-1-4(d) PCB-MAIN, PCB-SMPS

1. Remove 4 screws ❶ to fix PCB-MAIN.
2. Remove 2 Holder-PCB ❷ inserted in PCB-MAIN and lift up PCB-MAIN.
3. Remove 4 screws ❸ from PCB-SMPS.
4. Remove 2 Spacer-PCB ❹ inserted in PCB-SMPS and lift up PCB-SMPS.
5. Remove 2 screws ❺ to fix BRKT-PCB ass'y.

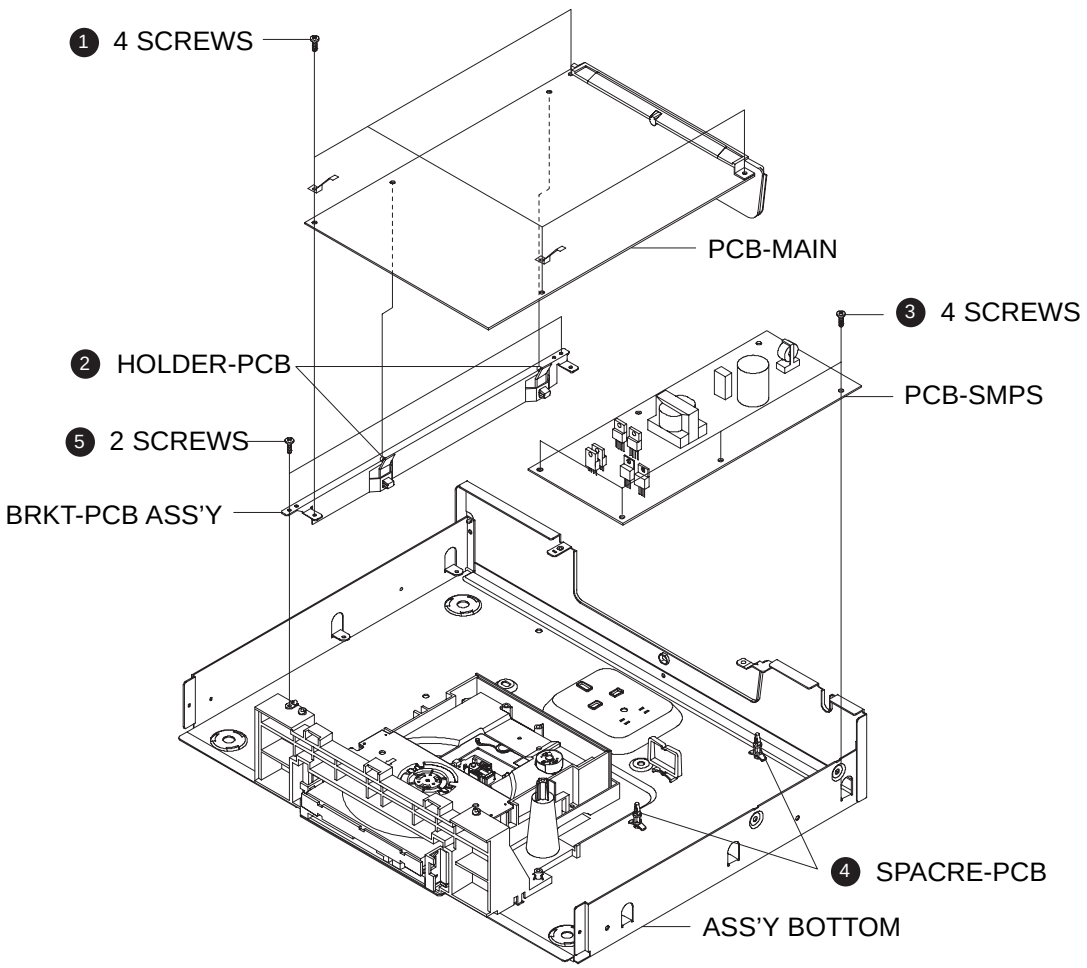


Fig. 5-4

5-1-5(e) Deck, Frame-chassis

1. Remove 4 screws ❶ from the deck and lift it up.
2. Remove 1 screws ❷ and 2hooks ❸ from the frame-chassis and lift it up.

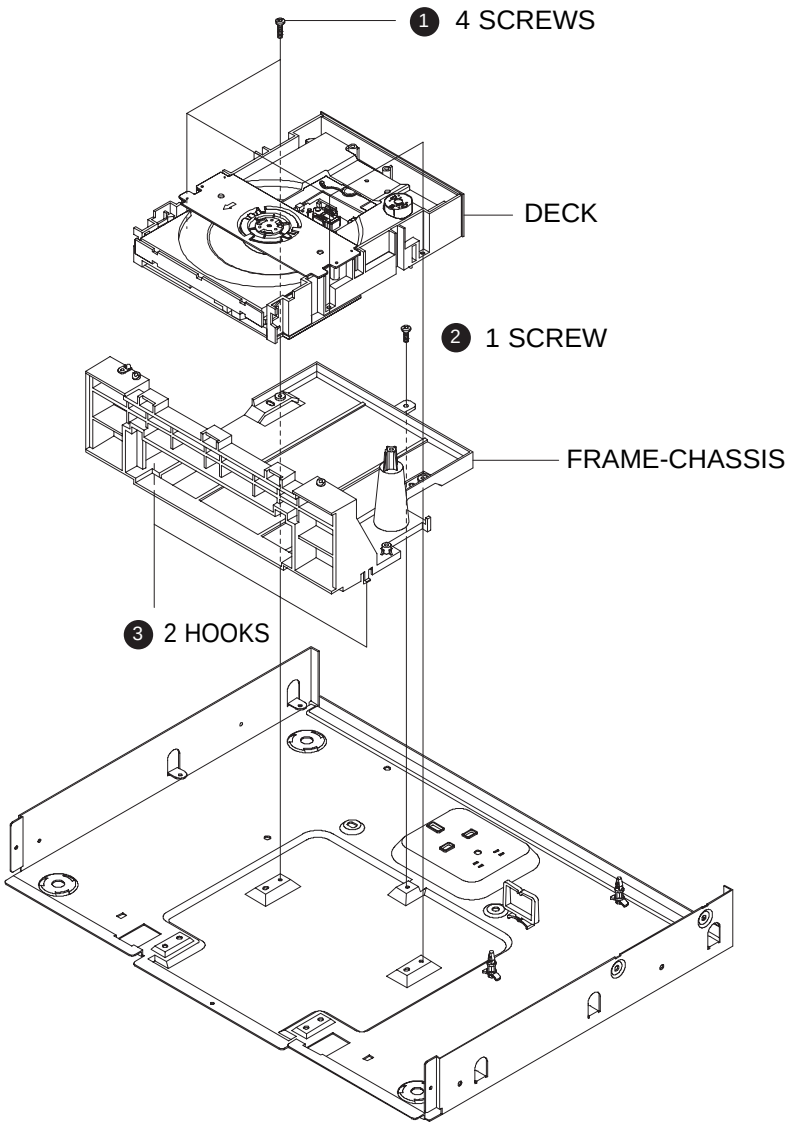


Fig. 5-5

5-1-2 PCB Locations

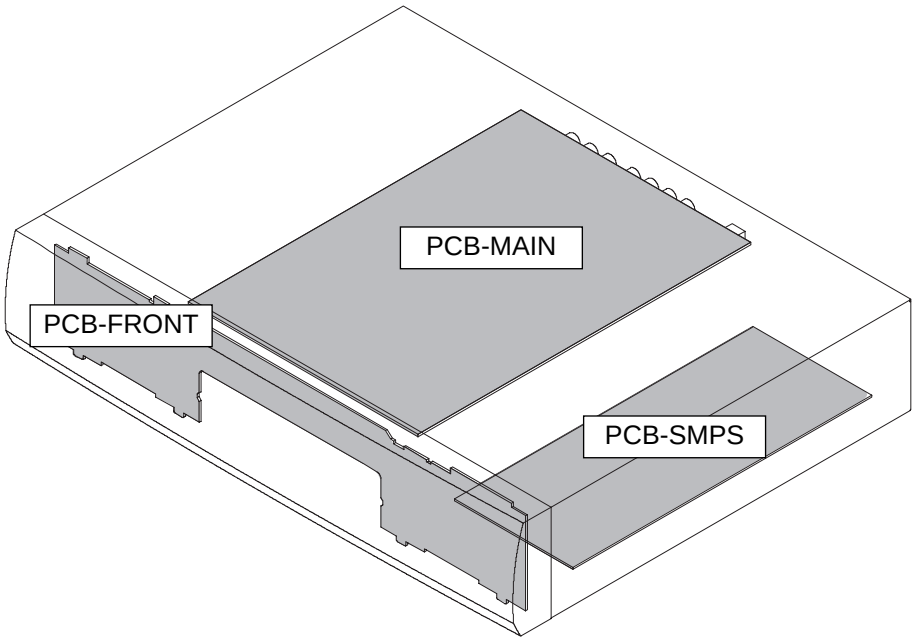


Fig. 5-6

5-1-3 Connector Diagram

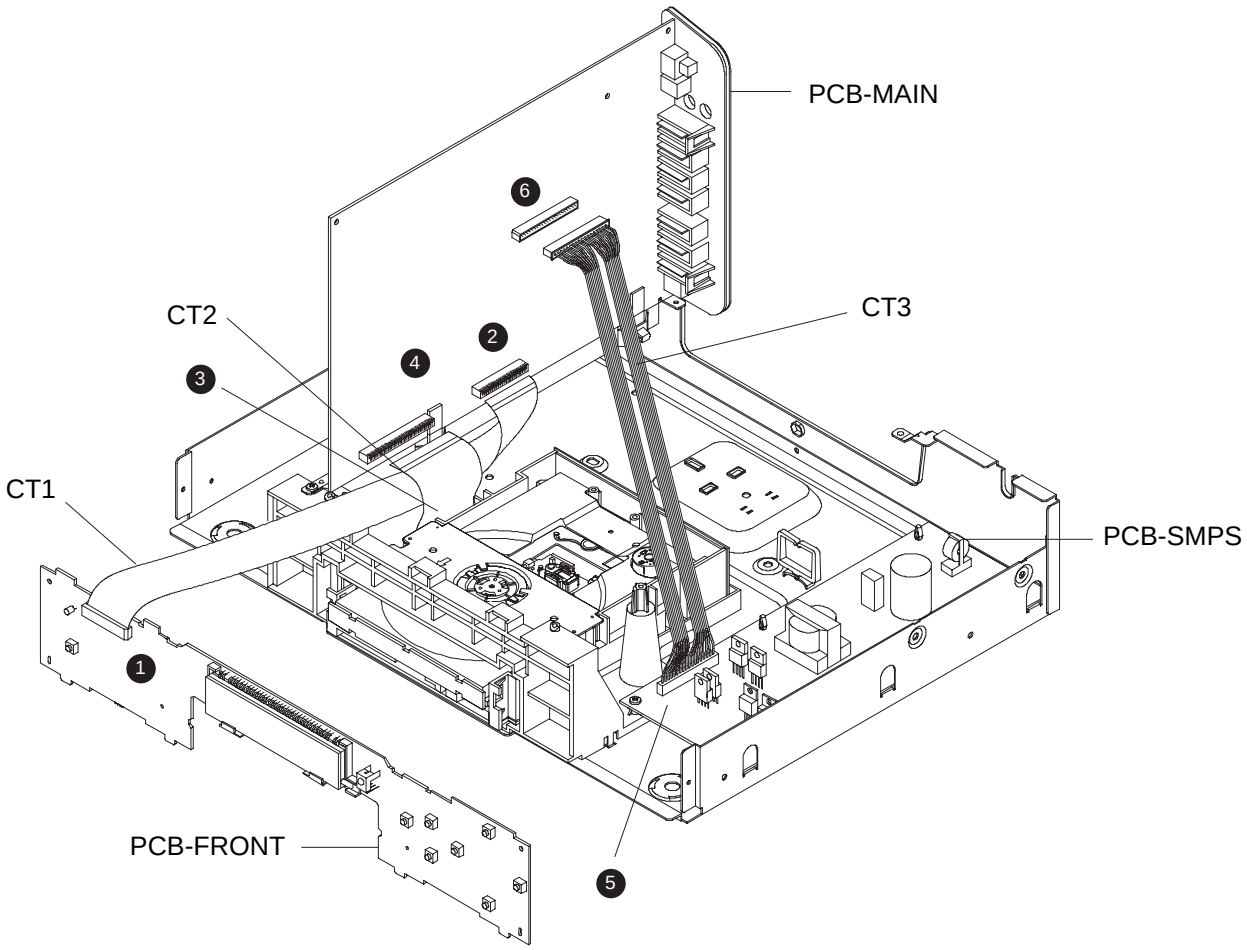


Fig. 5-7

No.	Connector wafer No.	Direction	Connector wafer No.
1	FJP1	CT1 → PCB-MAIN	DCN1
2	DCN1	PCB-FRONT	FJP1
3	CN5	CT2 → PCB-MAIN	CN1
4	CN1	DECK	CN5
5	PCN02	CT3 → PCB-MAIN	PCN1
6	PCN1	PCB-SMPS	PCN02

5-2 DVD-927

5-2-1 Exterior and PCB Disassembly

5-2-1(a) Door-tray

1) Supply power and open Tray ❶ .
2) Disassemble the door-tray ❷ in direction of arrow.
3) Close Tray ❶ and power off.

Note : If Tray ❶ doesn't open, insert a clip ❸ into the hole (as shown in detailed drawing), and open Tray ❶ manually.

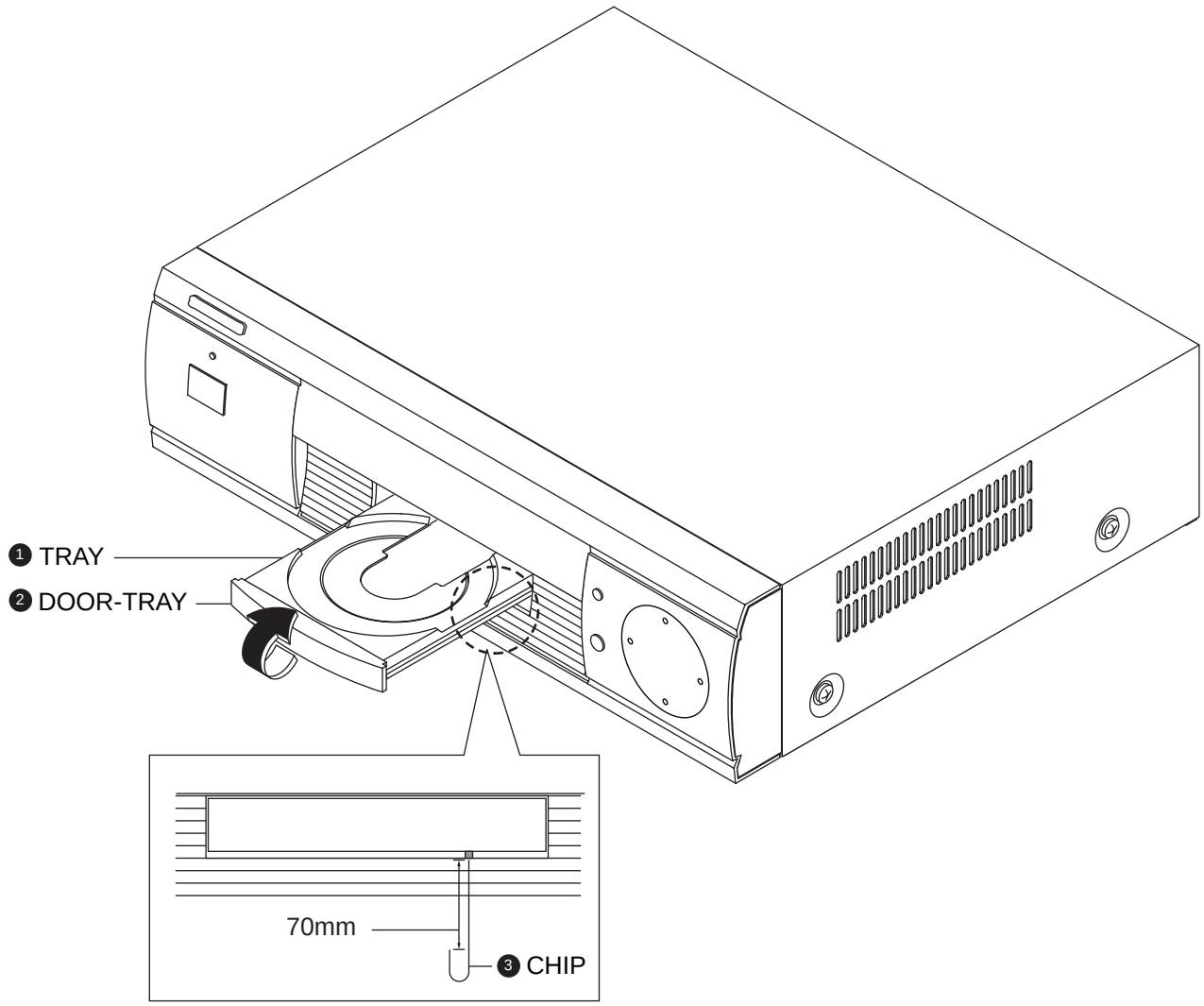


Fig. 5-8

5-2-2(b) Top cabinet

1. Remove 3 screws ❶ on the back panel.
2. Remove 4 screws ❷ , ❸ on the left and right side.
3. Lift up the top cabinet in direction of arrow.

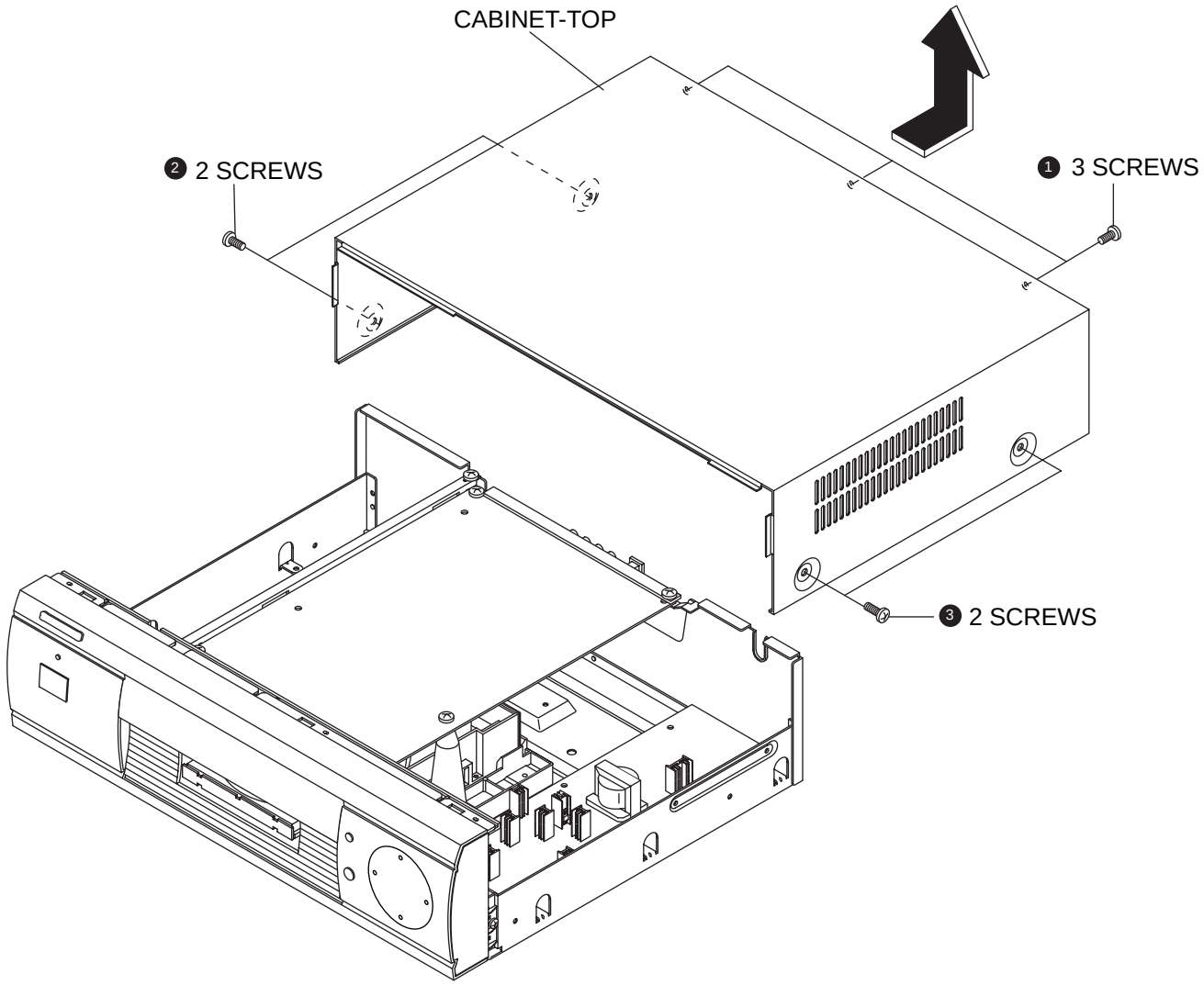


Fig. 5-9

5-2-3(c) Panel-Front, PCB-Front

1. Remove 2 screws ❶ , ❷ on the left and right side of panel-front ass'y
2. Remove 2 screws ❸ on the bottom of cover-panel ass'y and disassemble the front.
3. Remove 2 screws ❹ from PCB-front.
4. Remove 9 hooks to fix PCB-front and disassemble PCB-front.
5. Remove 2 screws ❺ on the top of cover-panel ass'y
6. Remove 4 top hooks ❻ and 5 bottom hooks ❼ and disassemble the cover-panel ass'y.

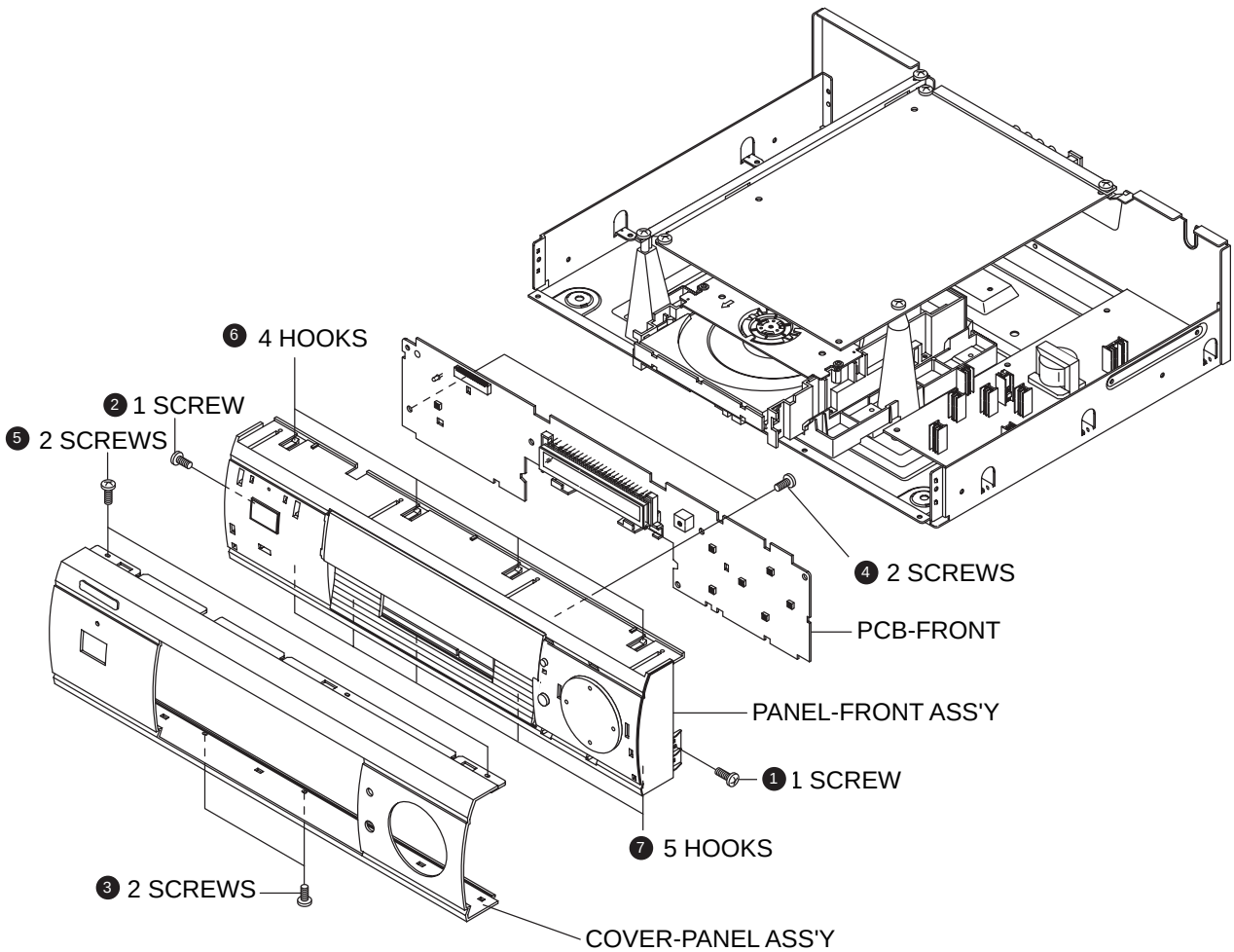


Fig. 5-10

5-2-4(d) PCB-MAIN, PCB-SMPS

1. Remove 4 screws ❶ to fix PCB-MAIN.
2. Remove 2 Holder-PCB ❷ inserted in PCB-MAIN and lift up PCB-MAIN.
3. Remove 3 screws ❸ from PCB-SMPS.
4. Remove 3 Spacer-PCB ❹ inserted in PCB-SMPS and lift up PCB-SMPS.
5. Remove 2 screws ❺ to fix BRKT-PCB ass'y.

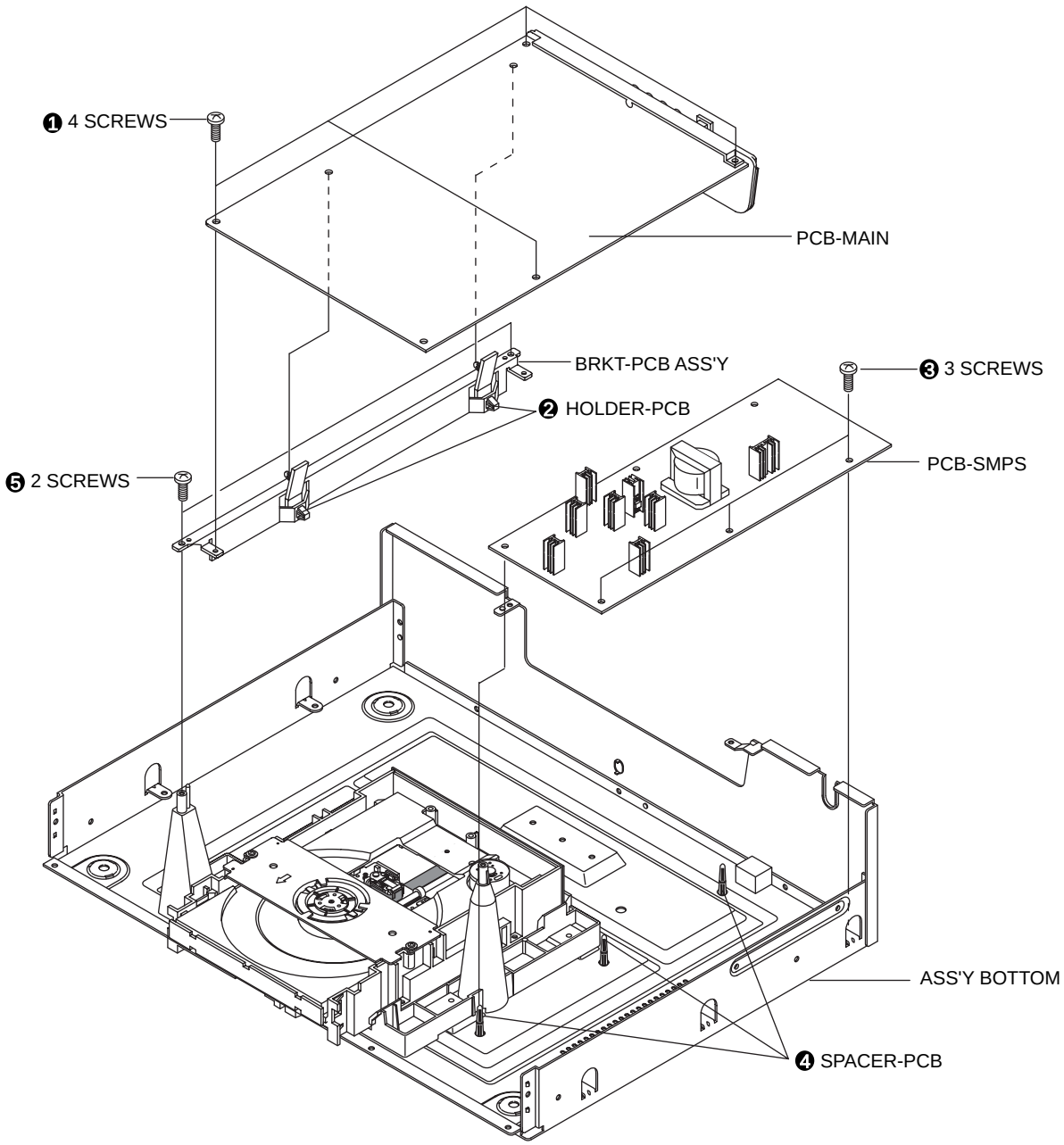


Fig. 5-11

5-2-5(e) Deck, Frame-chassis

1. Remove 4 screws ❶ from the deck and lift it up.
2. Remove 4 screws ❷ from the frame-chassis and lift it up.

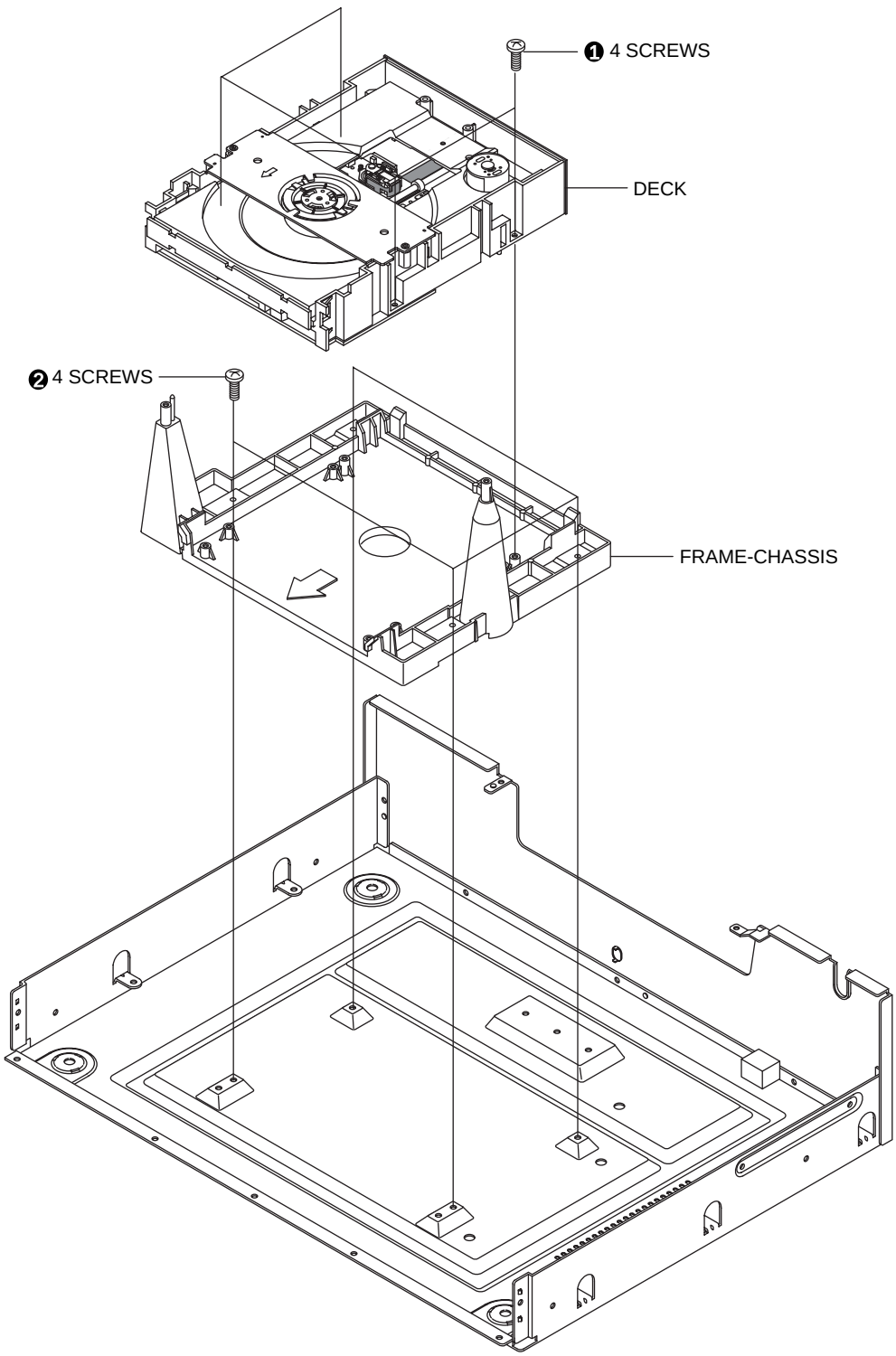


Fig. 5-12

5-2-2 PCB Locations

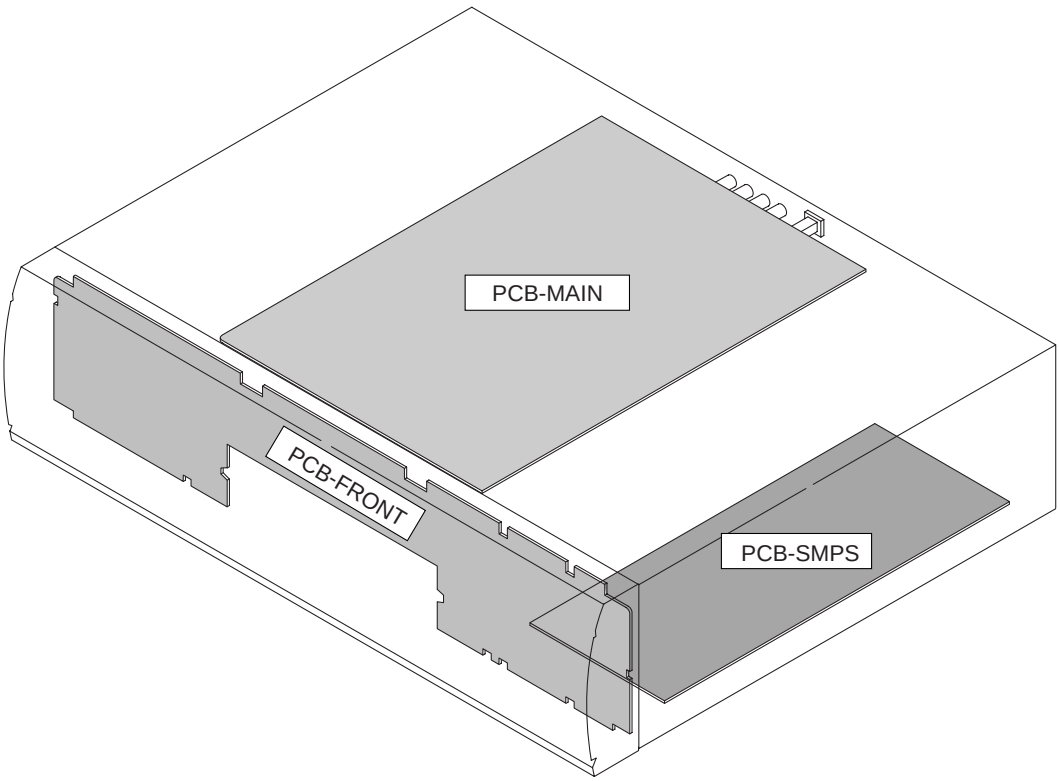


Fig. 5-13

5-2-3 Connector Connection

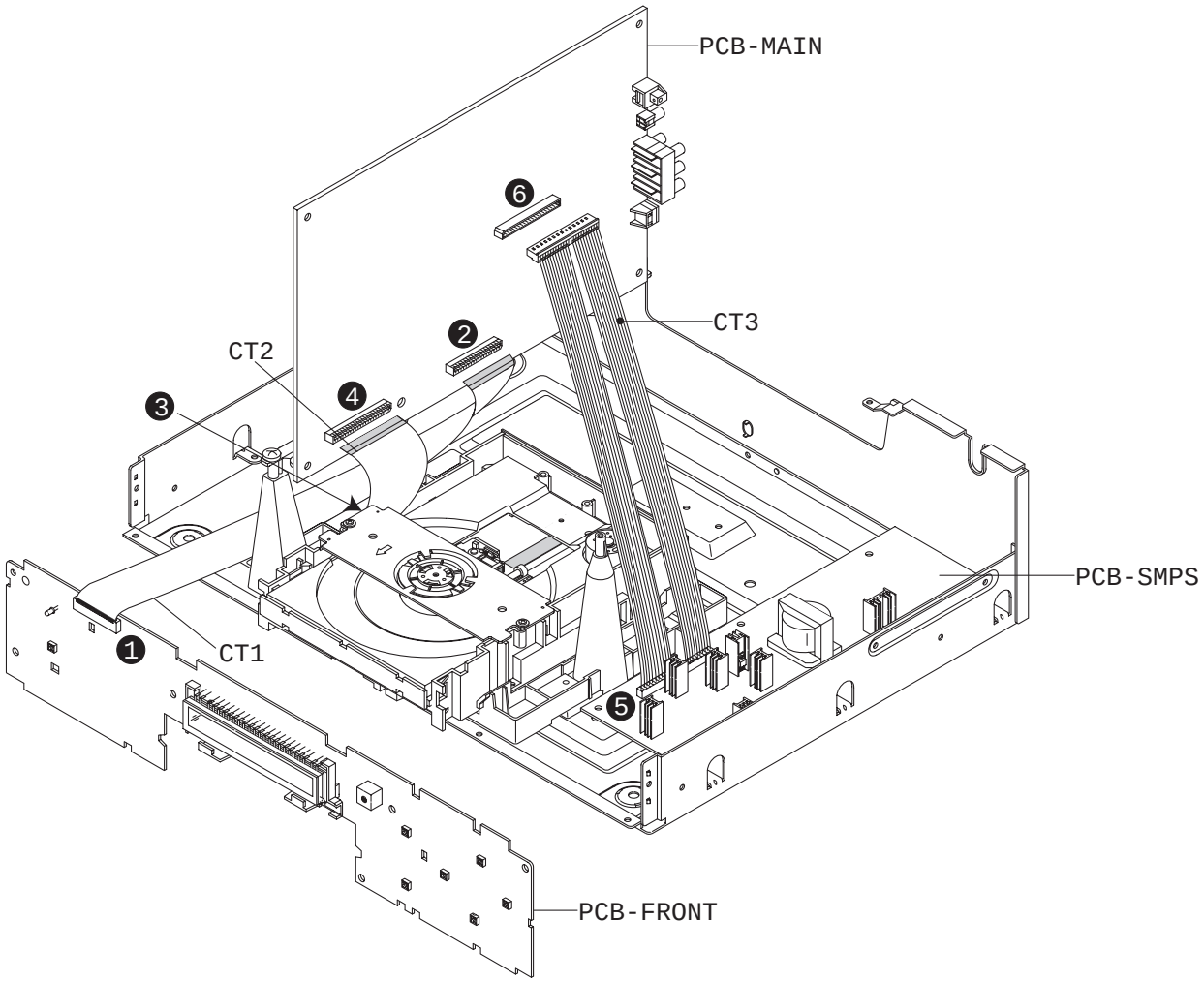


Fig. 5-14

No.	Connector wafer No.	Direction	Connector wafer No.
1	FJP1	CT1 ⟶ PCB-MAIN	DCN1
2	DCN1	PCB-FRONT	FJP1
3	CN5	CT2 ⟶ PCB-MAIN	CN1
4	CN1	DECK	CN5
5	PCN02	CT3 ⟶ PCB-MAIN	PCN1
6	PCN1	PCB-SMPS	PCN02

5-3 Deck Disassembly (Common to 907/927/807/707)

5-3-1 Tray

1. Remove 2 screws ❶ and lift up the ass'y-deck clamper ❷ .
2. Insert a clip into Emergency hole, and push Gear-Cam Center ❸ . When the tray ❹ comes out a little, pull it in direction of arrow “C”.
3. Pull the tray ❹ to disassemble, while simultaneously pushing the hook ❺ , ❻ in direction of arrow “A”, “B”.

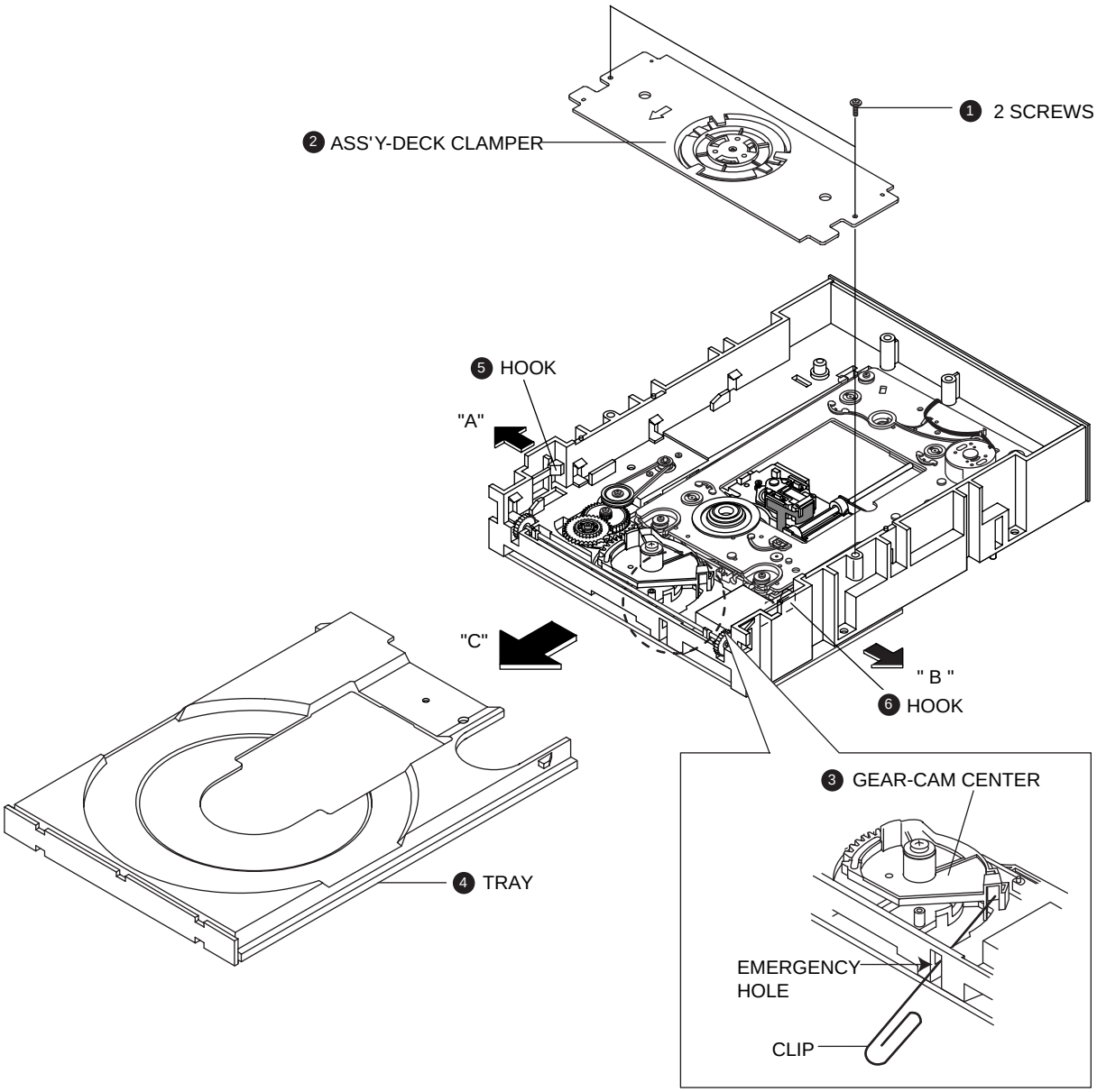


Fig. 5-15

5-3-2 Ass'y-Deck DVD

1. Remove 2 screws ❶ and disassemble the ass'y-PCB deck ❷ .
2. Disassemble the ass'y-deck DVD ❹ in direction of arrow "B", while simultaneously pushing the hook ❸ in direction of arrow "A".

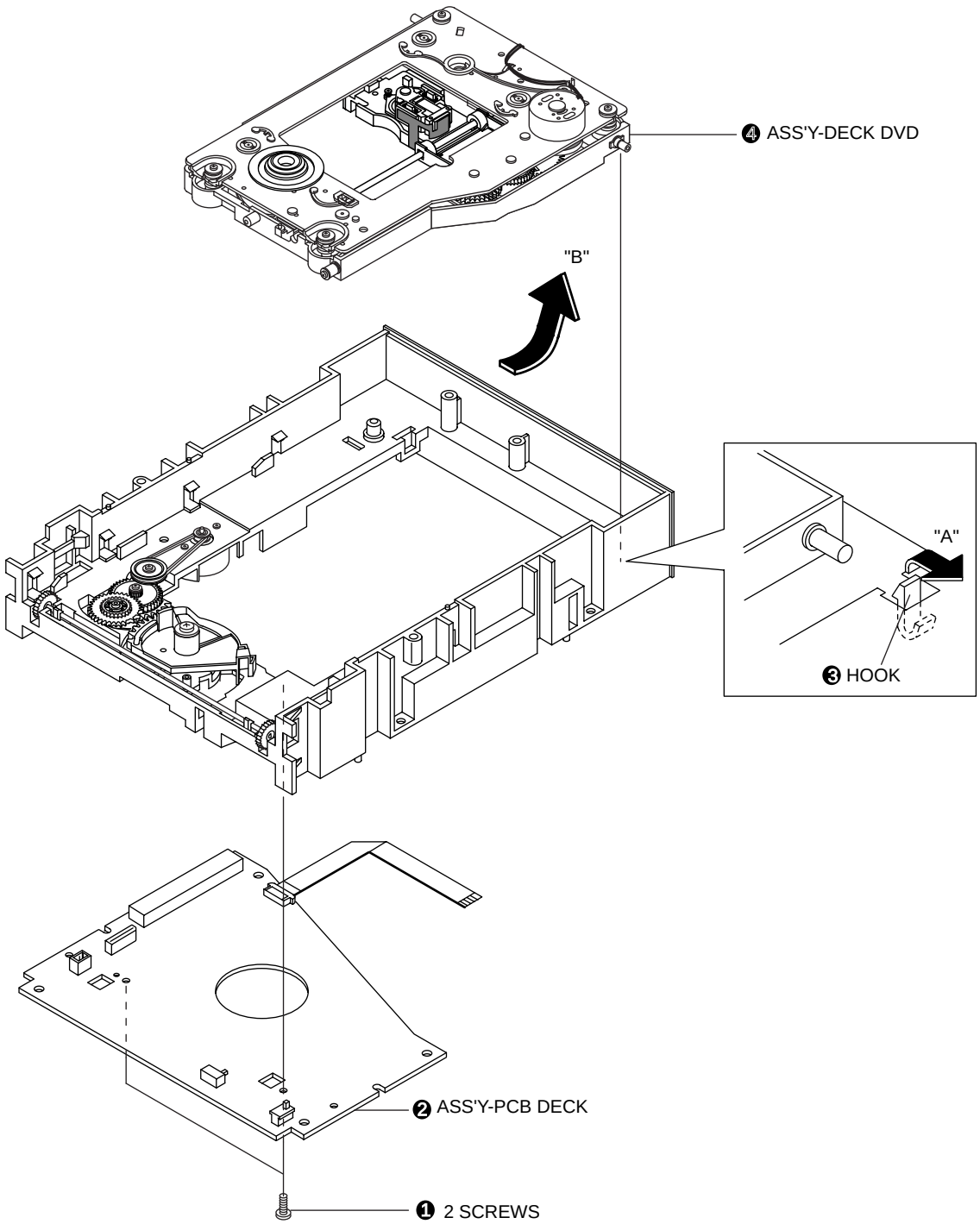


Fig. 5-16

5-3-3 Chassis-Main parts

1. Lift up the gear-tray ❶ , remove 1 screw ❷ and lift up the gear-cam center ❸ .
2. Lift up the belt-pulley ❹ , remove 1 screw ❺ and lift up the pulley-gear ❻ .
3. Remove 1 screw ❼ and lift up the gear-tray A ❽ and gear-cam sub ❾ .
4. Remove 2 screws ❿ and disassemble the ass'y-motor load ⓫ .
5. Remove 1 screw ⓬ and disassemble the lever-open S/W ⓭ .
6. Lift up the shaft-syncro ⓮ and remove the 2 gear-syncro ⓯ in both directions.

Assembling : Adjust the shaft end of motor-feed so that it is exactly equal to the height of the hump in gear pole of ass'y-gear magnet.

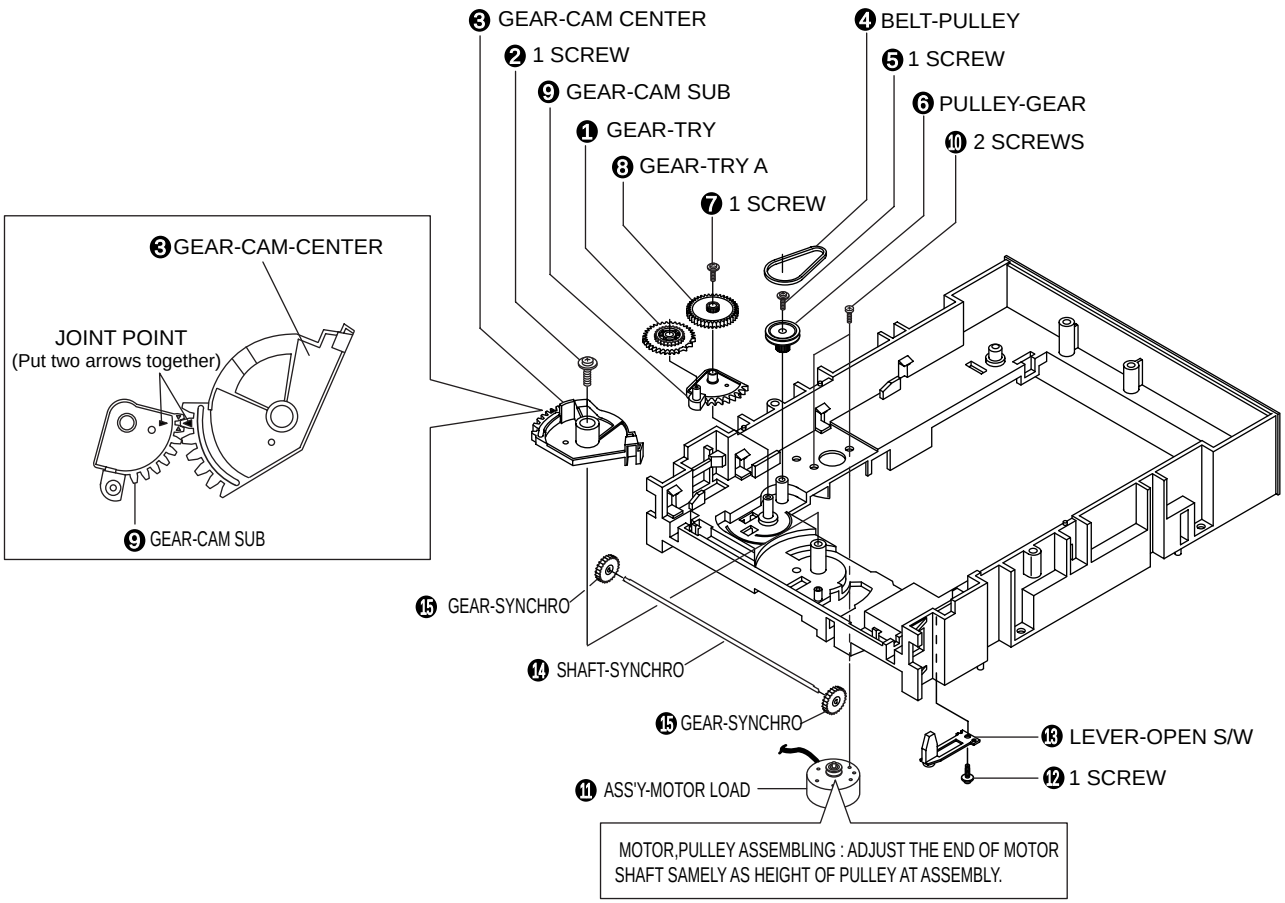


Fig. 5-17

5-3-4 Ass'y deck

1. Remove 4 screws ❶ .
2. Lift up the ass'y-deck ❷ .

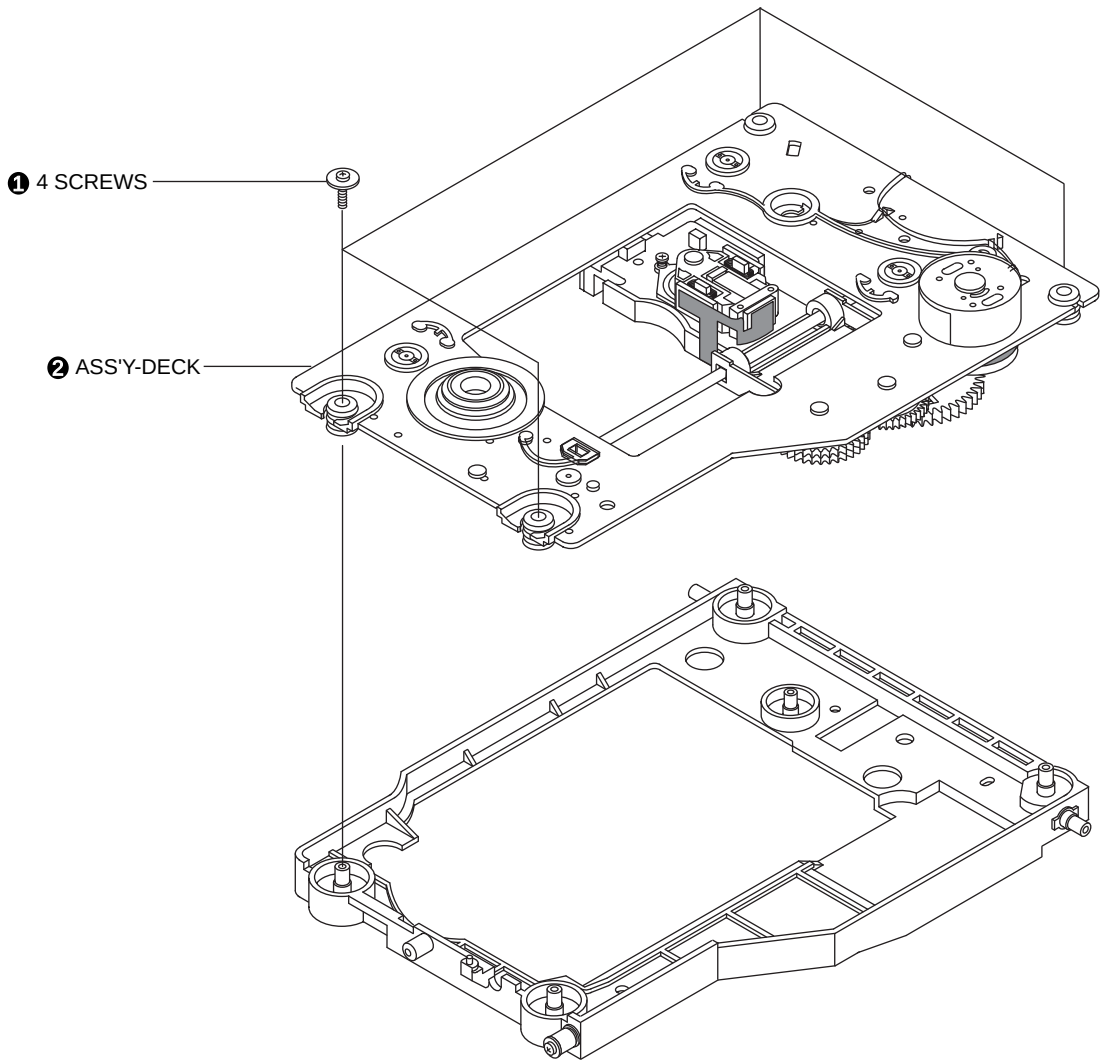


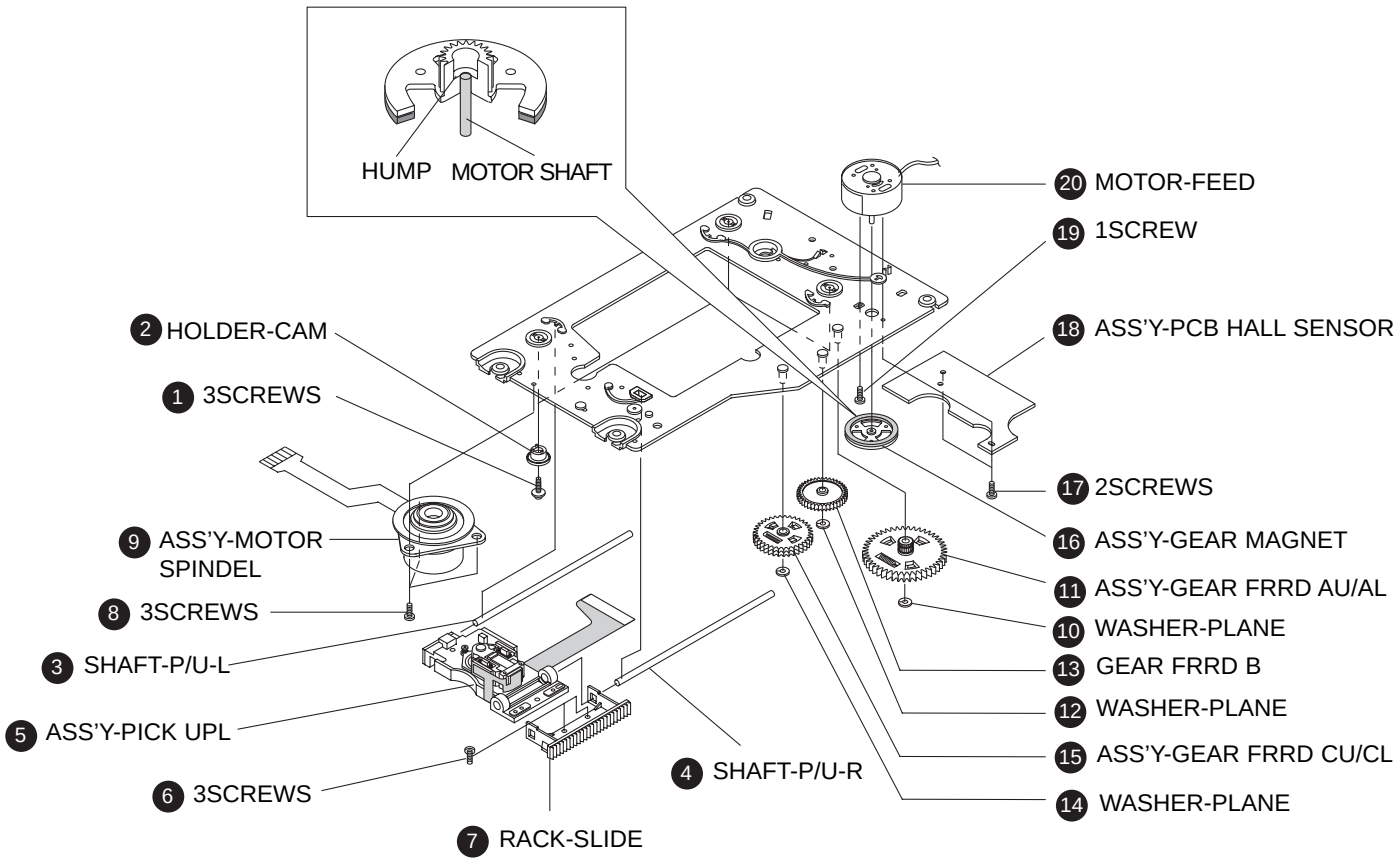
Fig. 5-18

5-3-5 Ass'y-Deck parts

1. Remove 3 screws (1) and disassemble 3 holder-cams (2).
2. Disassemble the rack-slide (7) and ass'y-pickup (5), 2scrrws (6) while simultaneously removing the shaft-P/U-L (3), shaft-P/U-R (4).
3. Remove 3 screws (8) and disassemble the ass'y-motor spind le (9).
4. Remove the washer-plain (10) and disassemble the ass'y-gear feed AU/AL (11).
5. Remove the washer-plain (12) and disassemble the gear-feed B (13).
6. Remove the washer-plain (14) and disassemble the ass'y-gear feed CU/CL (15).
7. Disassemble the ass'y-gear magnet (16).
8. Remove 2 screws (17) and disassemble the ass'y-PCB hall sensor (18).
9. Remove 1 screw (19) and disassemble the motor-feed (20).

Assembling : Adjsut the shaft end of motor-feed (1) so that it is exactly equal to the height of the hump in gear pole of ass'y-gear magnet.

Fig. 5-19



MEMO

7. Circuit Descriptions

7-1 SMPS

7-1-1 Comparison between linear power supply and SMPS

7-1-1(a) LINEAR

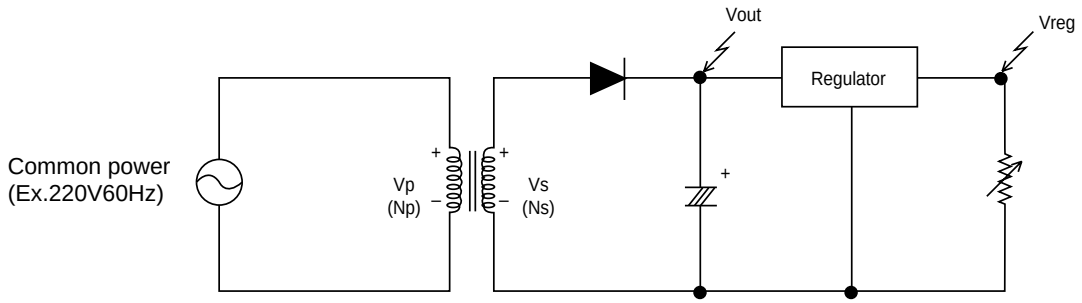
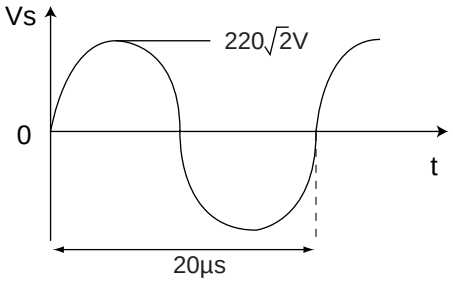


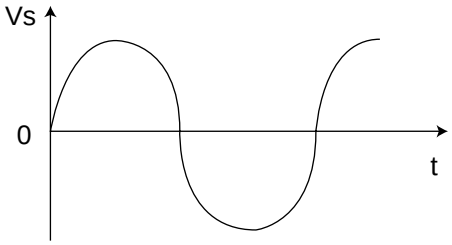
Fig. 7-1 Linear Power Supply

◆ Waveform/Description



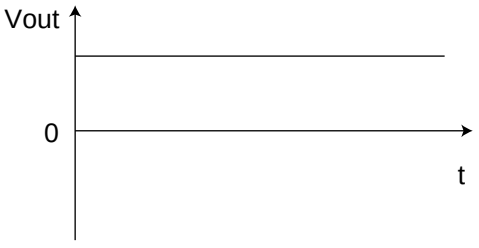
Input : Common power to transformer(Vp)

Fig. 7-2



The output Vs of transformer is determined by the ratio of 1st Np and 2st Ns.
Vs = (Ns/Np) x Vp

Fig. 7-3



Vout is output (DC) by diode and condensor.

Fig. 7-4

◆ Advantages and disadvantages of linear power supply

a. Advantages :
Little noise because the output waveform of transformer is sine wave.

b. Disadvantages :
» Additional margin is required because Vs is changed (depending on power source). (The regulator loss is caused by margin design).
» Greater core size and condensor capacity are needed, because the transformer works on a single power frequency.

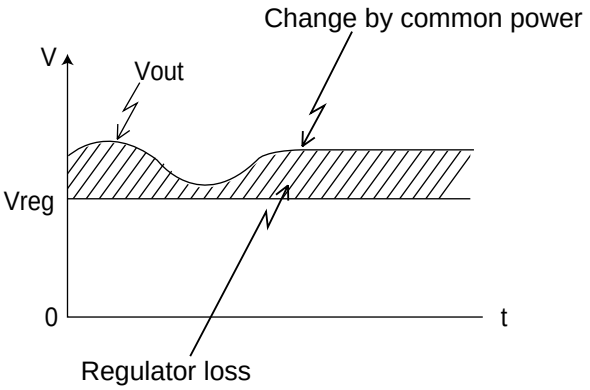


Fig. 7-5

7-1-1(B) SMPS(PULSE WIDTH MODULATION METHOD)

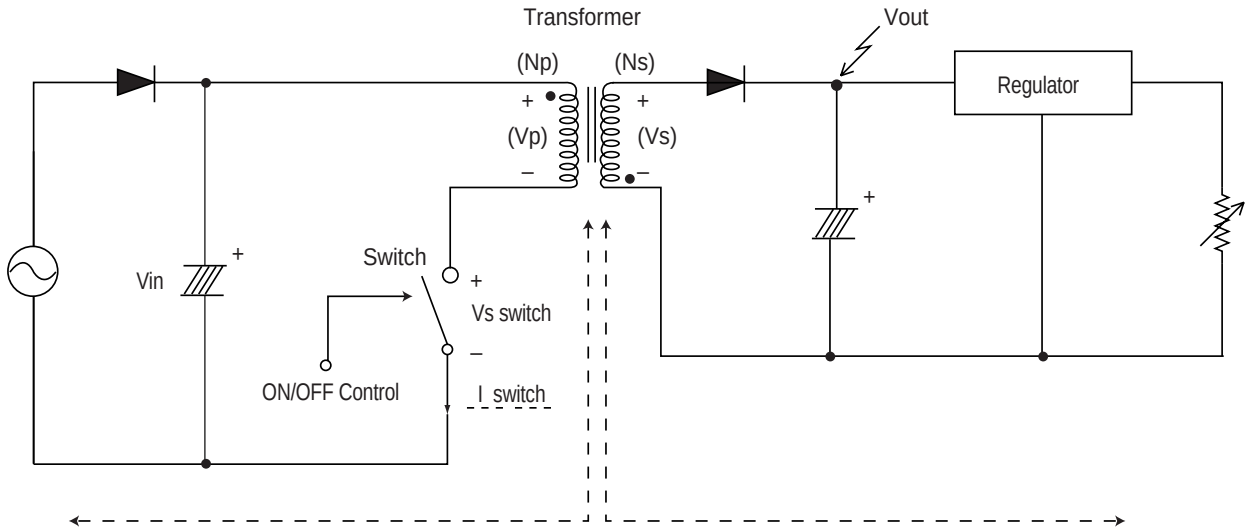


Fig. 7-6 SMPS

◆ Terms

- 1st : Common power input to 1st winding.
- 2nd : Circuit followings output winding of transformer.
- f(Frequency) : Switching frequency(T : Switching cycle)
- Duty : (Ton/T) x 100

7-1-2 Circuit description(FLY-BACK PWM(Pulse Width Modulation) control)

7-1-2(a) AC power rectification/smoothing terminal

- PD01,PD02,PD03,PD04 : Convert AC power to DC(Wave rectification)
- PO03 : Smooth the voltage converted to DC(Refer to VIN of Fig. 7-7)
- PC01, PC02, PC10, PC11, PC12, PC13, PL01, PL02, PL03 : Noise removal at power input/output
- PVA1 : SMPS protection at power surge input
  (PVA1 pattern open is to remove noise)
- PR10 : Rush current limit resistance at the moment of power cord insertion.
  » Rush current = (AC input voltage x 1.414 - Diode drop voltage) / Pattern resistance + PL02,01 resistance + PC10 resistance + PR10) (AC230V based : approx. 26A)
  » Without PR10, the bridge diode might be damaged as the rush current increases.

7-1-2(b) SNUBBER circuit : PR15, PR16, PC04, PD05, PD11, PR17

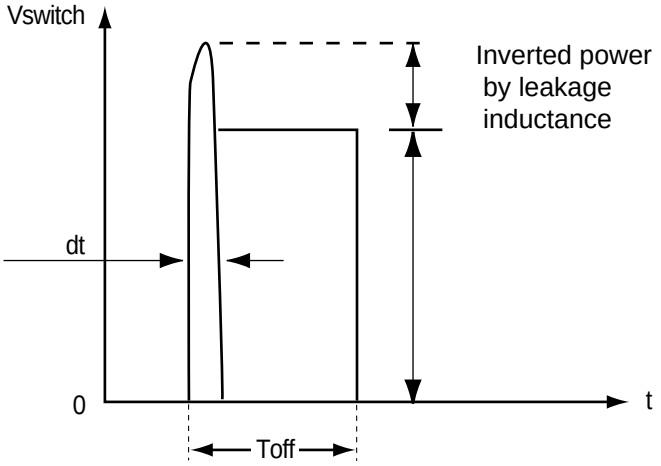


Fig. 7-7

- Prevent residual high voltage at the terminals of switch during switch off/Suppress noise.
  High inverted power occurs at switch (PIC1) off, because of the 1st winding of transformer:
  (V=L1xdi/dt. LI : Leakage Induction)
  A very high residual voltage exists on both terminals of PIC1 because dt is a very short.

- SNUBBER circuit protects PIC1 from damage through leakage voltage suppression by RC, (Charges the leakage voltage to PD11 and PC04, and discharges to PR15 and PR16).
- PC05, PL17 : For noise removal

7-1-2(c) PIC1 Vcc circuit

- PR11, PR12, PR13, PR14 : PIC1 driving resistance (PIC1 works through driving resistance at power cord in)
- PIC1 Vcc : PR18, PD12, PC06

1) Use the output of transformer as Vcc, because the current starts to flow into transformer while PIC1 is active.
2) Rectify to PD12 and smooth to PC06.
3) Use the output of transformer as PIC1 Vcc : The loads are different before and after PIC1 driving.
   (Vcc of PIC1 decreases below OFF voltage, using only the resistance due to load increase after PIC1 driving.)

7-1-2(d) Feedback control circuit

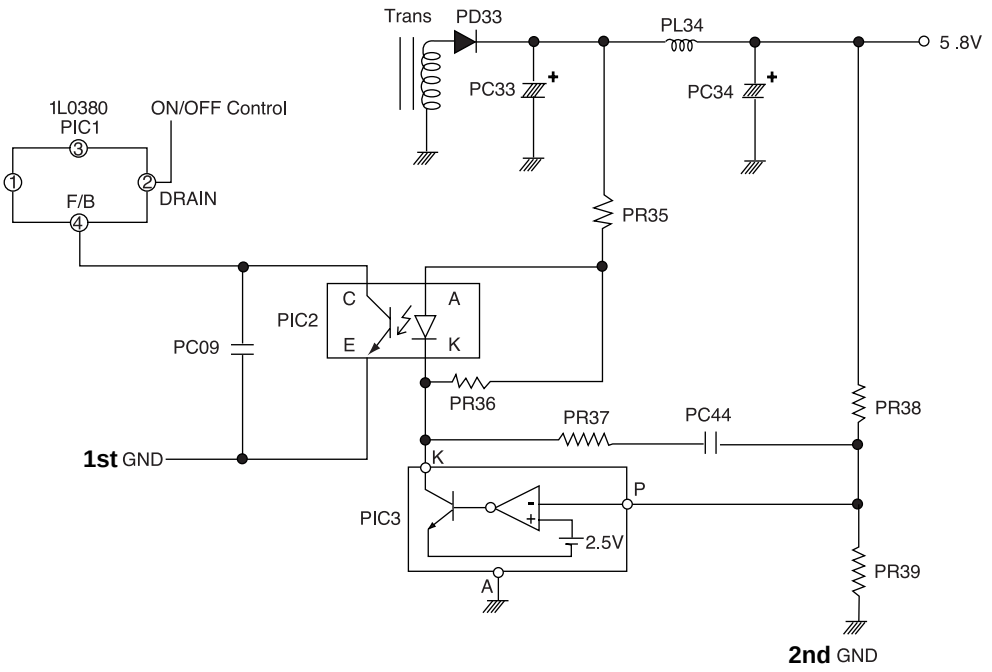


Fig. 7-8

- F/B terminal of PIC1 determines output duty cycle.
- C-E(Collector-Emitter) of PIC2 and F/B potential of PIC1 are same.

◆ Operation descriptions

a. Internal OP-Amp '+' base potential of PIC3 is 2.5V and external "-" input potential is connected with PR38 and PR39 to maintain Vout of 5.8V. (Vout = ((PR36 x PR39) / PR39) x 2.5V)
b. If load of 5.8 V terminal increases(or AC input voltage decreases) and Vout decreases below 5.8V, then : PIC3 'P' potential down below 2.5V --> PIC3 A-K of base current down --> PIC3 of A-K current down --> PIC2 Diode current down --> PIC2 C-E current down --> PIC2 C-E voltage up --> PIC1 F/B voltage up --> Out Duty up --> Transformer 1st current up --> Transformer 1st power up --> Vout up --> Maintain Vout 5.8V
c. If load of 5.8 V terminal decreases(or AC input voltage rises) and Vout rises above 5.8V, then : Reverse sequence of the above description Æ Duty down Æ Vout down Æ Maintain 5.8V (i.e., the feedback to maintains 5.8V).
   - PR35, PR36 : Reduce 5.8V overshoot
   - PR37, PC44 : Prevent PIC3 oscillation(for phase correction)
   - PC09 : Adjust feedback response rate

7-1-3 Internal block diagram

7-1-3(a). Internal block diagram of SMPS circuit

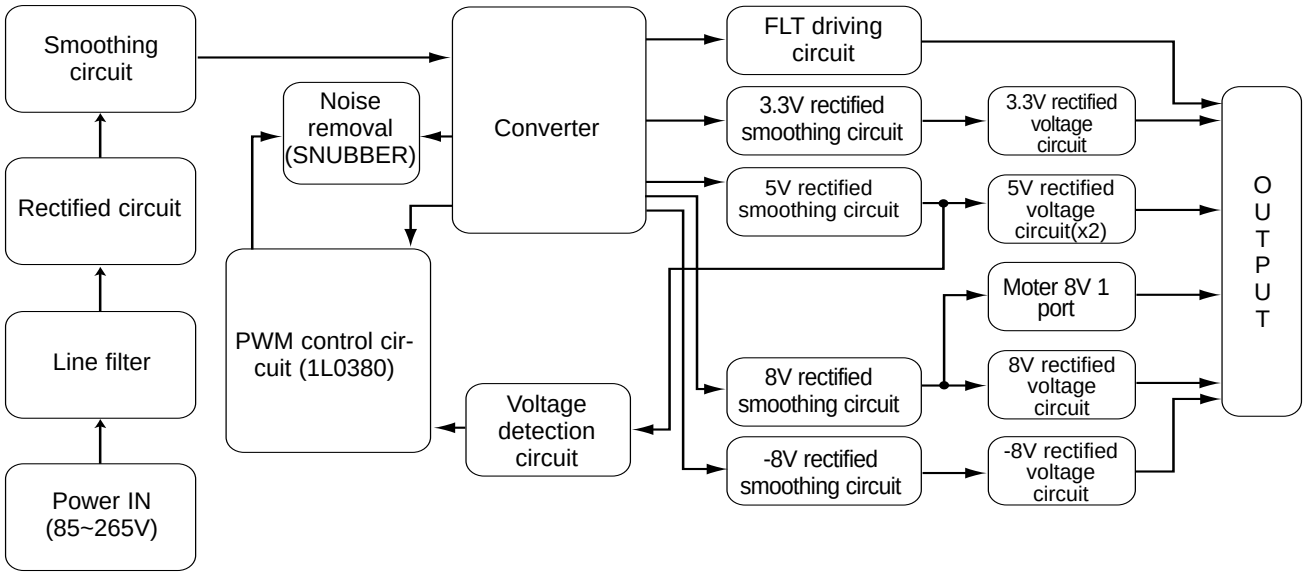


Fig. 7-9

7-1-3(b). PIC1(1L0380) internal block diagram

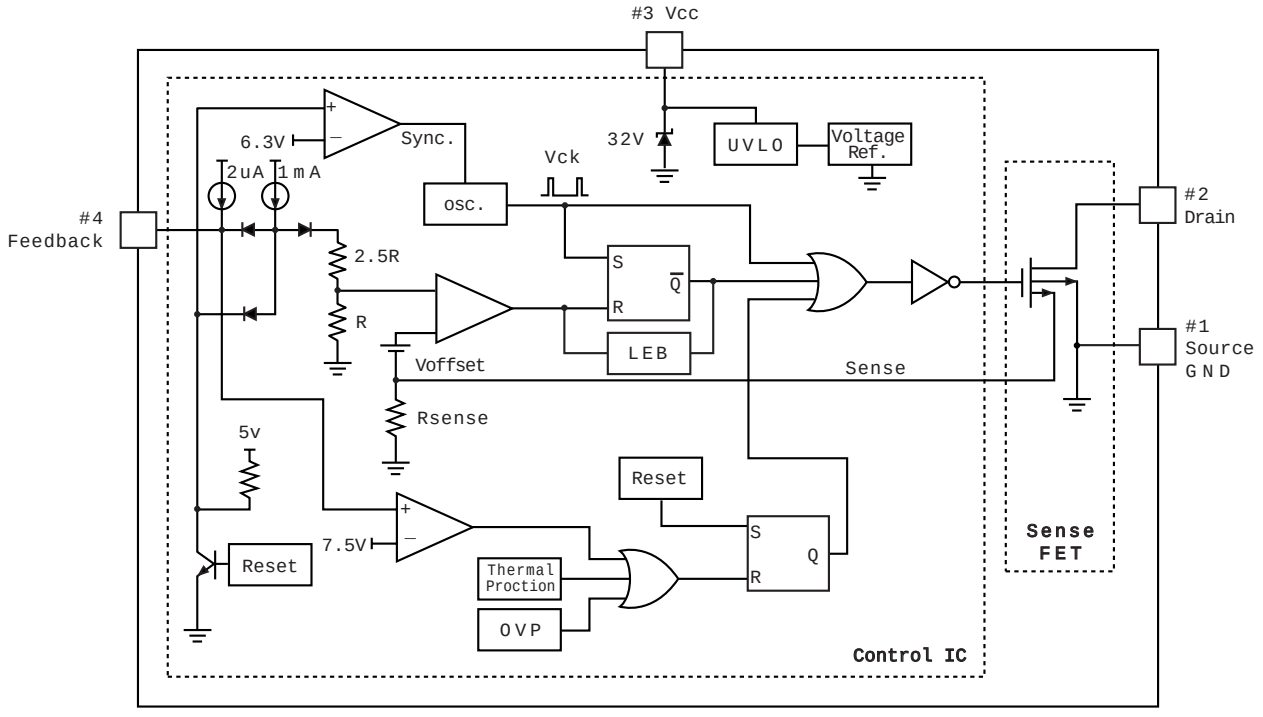


Fig. 7-10

7-2 RF circuit description

7-2-1 RIC1(TA1236F)

TA1236F is combined with TA1253FN, TC9240F and TC90A19F as bipolar IC developed for DVD SERVO system. Main features include DVD waveform equalizing, CD waveform equalizing, focus error signal generation, 3-beam tracking error signal generation, laser power control, etc. after receiving the pick-up output converted into I/V.

7-2-1(a) Basic potentiometer

TA1236F uses a single power method and each circuit is based on V_{REF} of 2.1V. Note : symmetrical about GND for V_{REF} because V_{REF}(pin20) terminal is needed for IC, which uses the peripheral V_{REF} and $2V_{REF}$ output(pin18).

7-2-1(b) RF signal

Fig. 7-11 shows the flow of signal generated by the pick-up.
A, B, C, D signals detected from pick-up are converted in to RF signal(A+B+C+D) via RF summing AMP.
RF signal is inputted to RFN(pin55) among input terminals and RFP(pin54) is used for AC ground.

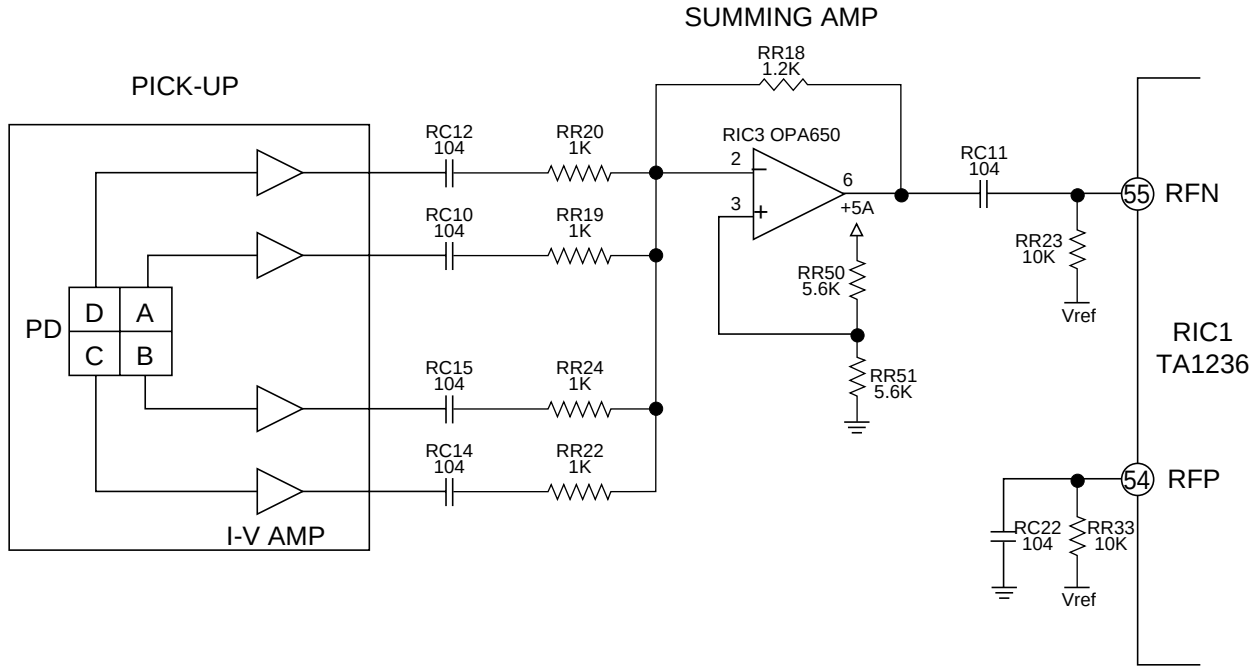


Fig. 7-11

Fig. 7-12 shows the waveform-equalizing block diagram for the RF signal.
It outputs to EQout(pin 46) terminal by initially changing switching AMP gain of DVD and CD, and then adjusting the level in VCA. It controls VCA gain by means of RF gain(pin 48) and interfaces with PWM signal, (output from RFGC terminal of TC9420F, via low-pass filter to constitute a loop for adjustment of constant amplitude). The gain in EQout is 1.0 for DVD and 1.67 for CD.

EQout terminal is connected with EQin(pin 45) externally, and inputs into DVD EQ and CD EQ(Waveform equalizing circuit).

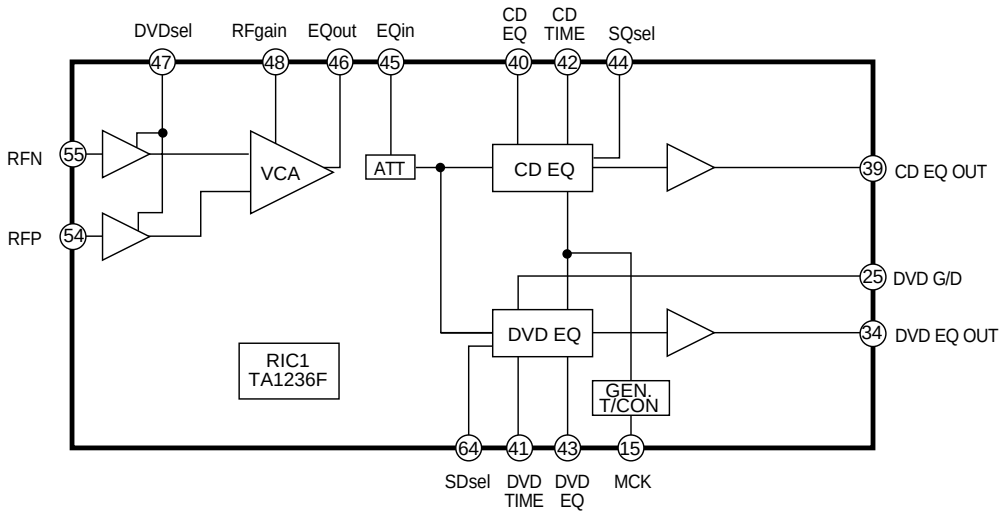


Fig. 7-12

The control parameters of DVD EQ and CD EQ are as follows.

1) DVD EQ control parameter

- DVDEQ(pin 43) : Changes the gain of peak frequency with EQ frequency characteristic. Convert PWM signal, output from TC90A19F, into DC via low-pass filter.
- DVDTIME(pin 41) : Changes the peak frequency with EQ frequency characteristic. Convert PWM signal, output from TC90A19F, into DC via low-pass filter.
- S/Dse1(pin 64) : Changes the peak frequency (like DVD TIME) as 2d control. (Switched according to regeneration speed ratio of single/double layer).
- MCK(pin 15) : Input the base clock and link the peak frequency with it. The amplitude of MCK might be small (500mVp-p).
- DVDGD(pin 25) : Changes the group delay characteristics with EQ frequency characteristic.

2) CD EQ control parameter

- CD EQ(pin 40) : Changes the gain of peak frequency with EQ frequency characteristic. The constant DC is supplied to a resistive voltage divider.
- CD TIME(pin 42) : Changes the peak frequency with EQ frequency characteristic. The constant DC is supplied to a resistive voltage divider.
- S/Qse1(pin 44) : Changes the peak frequency (such as CD TIME) as 2d control. (Switched according to play linear velocity ratio of quadruple/single rate. Set to '0' because only one rate is vaild in this system).

CD and DVD signals are equalized according to the above control parameters ,and then output to CD EQ OUT (pin39) and DVD EQ OUT (pin34). Then, CD signal is transferred to TC9420F (pin 38), DVD signal is sent to TC90A19F(pin 50) and detected.

7-3 System control

7-3-1 Outline

The main micom peripheral circuit is composed of 16bit Micom(MIC1,TMP93CS41), 2M PROM (MIC2,AM27C020 for Microcode and data save, 1M SRAM(MIC3, KM681000) for data read/write on running, 512 byte EEPROM (MIC5, IS24C02)for permanent storage of data needed at power off, MIC4(74AC573) to latch only address in the bus where address and data are mixed, address decoder (MIC6, 74HC00) for selection of external device chip and 20MHz clock oscillator for micom operation. The micom(MIC1, TMP93CS41) mounted in main board analizes the key commands of front panel or instructions of remote control through communication with micom(FIC1, LC86P6232) of front and controls the devices on board to execute the corresponding commands after initializing the devices connected with micom on board at power on.

7-3-2 Block diagram

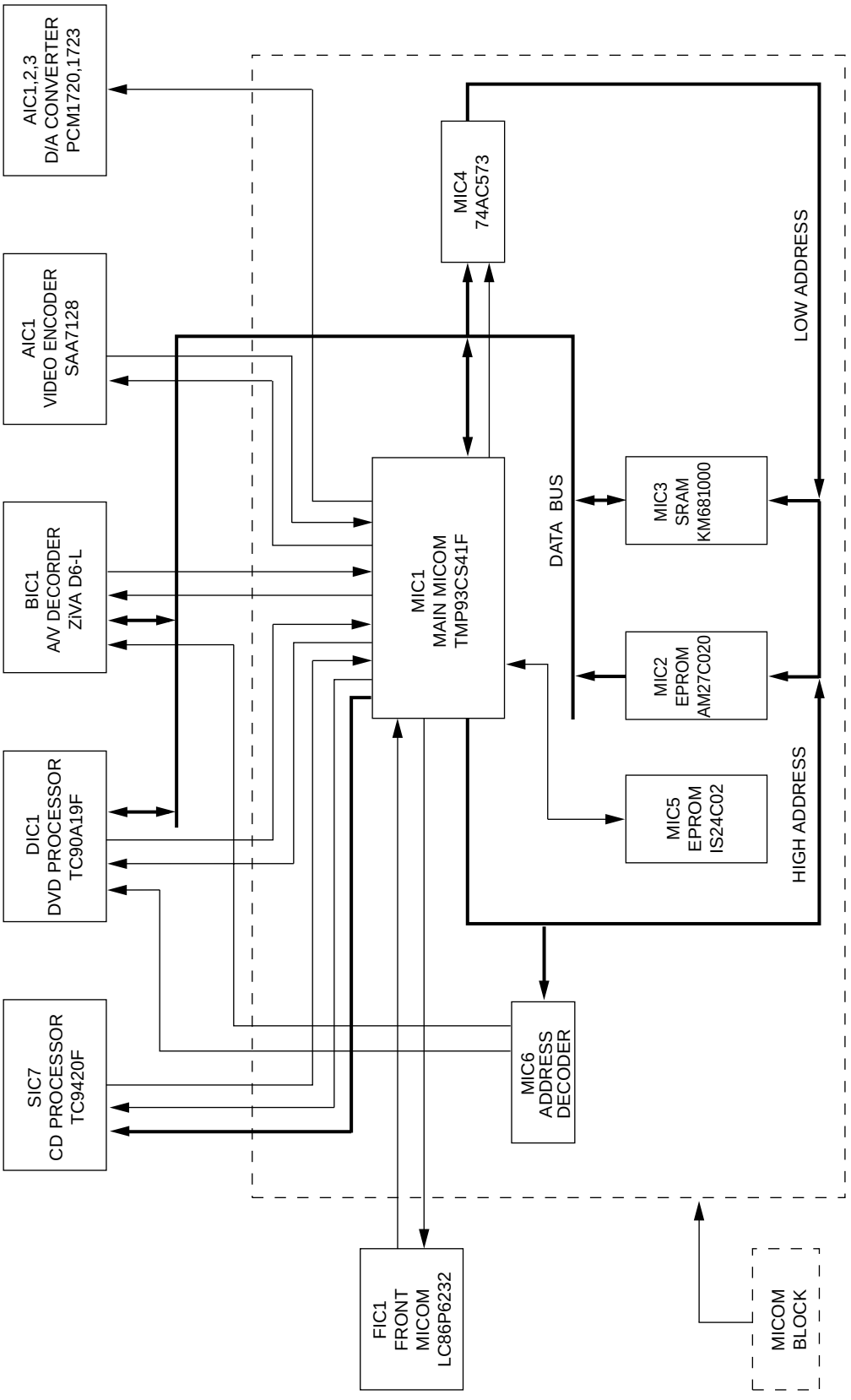
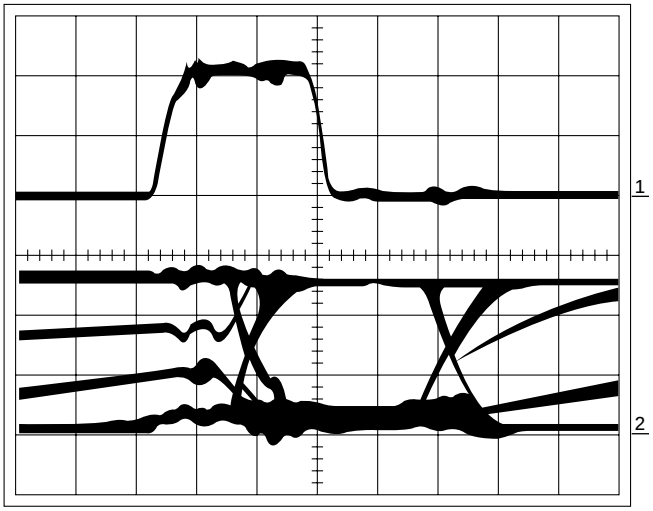


Fig.7-13

7-3-3 Waveform description

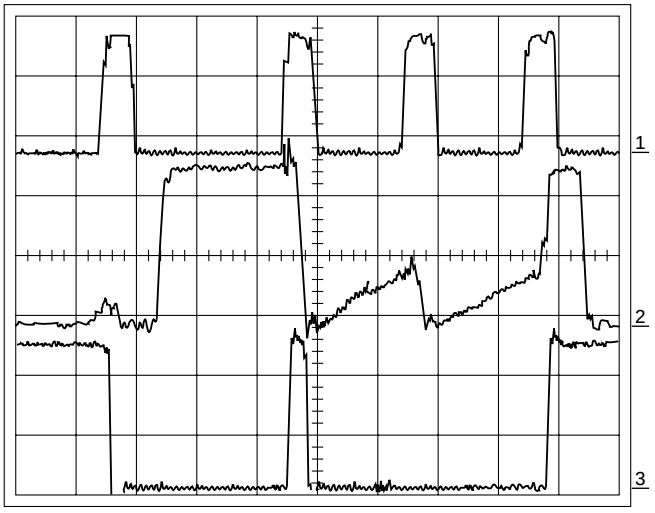
The setup time is approx. 18 nsec. at falling edge of ALE(Address Latch Enable) signal, which has enough hold time.
At power of 5V, the min. setup time of MIC4(TC74AC573) is 5 nsec, and min. hold time is 3 nsec. It can be known that data input condition meets setup time and hold time. The eye part of input data in falling edge of ALE signal corresponds to address on the bus where address and data are mixed.



- CH1 : ALE
  (MIC4-11, Address Latch Enable Signal)
- CH2 : HAD0-9
  (Input data of MIC4, Common bus data)

Fig. 7-14

The inclining and rising part indicate floating range of data bus.
That is, there is no operational problem because micom is time area not to access any devices sharing a common bus. The waveform is shown to incline and rise by pull-up resistance and capacitance on PCB pattern.
When micom accesses each device sharing bus, it falls the chip select signal of corresponding chip to (CS1 : MIC2-22, CS2:MIC3-22, /DPCS:MIC6-76, /DVD1CS:BIC1-175) 0 (Low) before trial. So to speak, the bus is used by time-division as shown in Fig 7-16, 17. Two and more devices can't be accessed simultaneously.



- CH1 : ALE
  (MIC4-11, Address Latch Enable Signal)
- CH2 : HAD0-7 (MIC4-2 to 9, Input data)
- CH3 : HA0-7 (MIC4-19 to 12, Output data)

Fig. 7-15

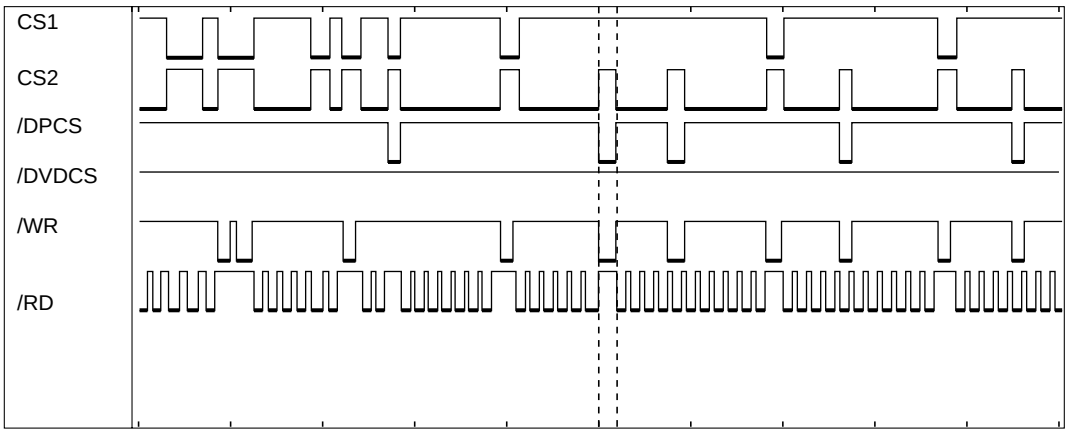


Fig. 7-16

- CH1 : CS1 (MIC3-22, SRAM CHIP SELECT)
- CH2 : CS2 (MIC2-22, EPROM CHIP SELECT)
- CH3 : DPCS (DIC1-12, DVD PROCESSOR CHIP SELECT)
- CH4 : DVDCS (BIC1-175, A/V DECODER CHIP SELECT)
- CH5 : WR (MIC1-73, MICOM OUTPUT WRITE SIGNAL)
- CH6 : RD (MIC1-72, MICOM OUTPUT READ SIGNAL

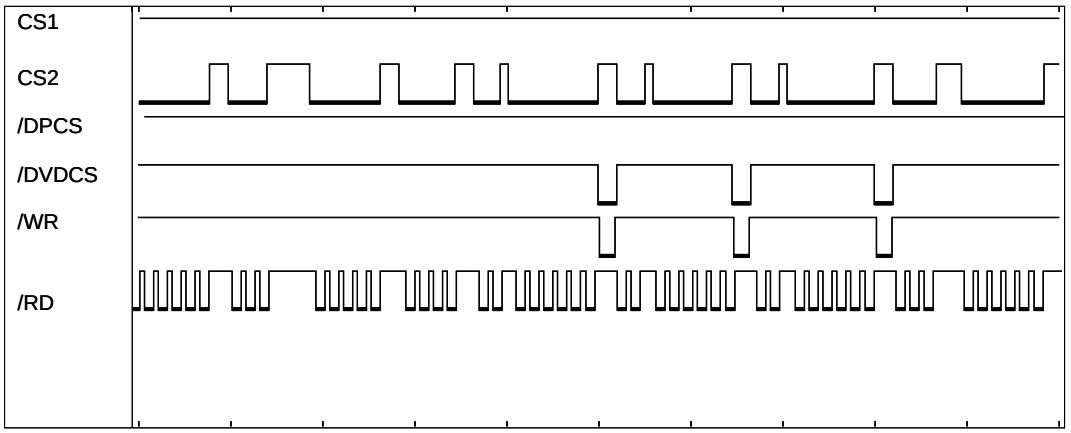


Fig. 7-17

- CH1 : CS1 (MIC3-22, SRAM CHIP SELECT)
- CH2 : CS2 (MIC2-22, EPROM CHIP SELECT)
- CH3 : DPCS (DIC1-12 DVD PROCESSOR CHIP SELECT)
- CH4 : DVDCS (BIC1-175, A/V DECODER CHIP SELECT)
- CH5 : WR (MIC1-73, MICOM OUTPUT WRITE SIGNAL)
- CH6 : RD (MIC1-72, MICOM OUTPUT READ SIGNAL)

7-4 DVD Data Processor

7-4-1 Outline

DIC1(TC90A19F) performs PLL(Phase Locked Loop), Sync detection, demodulation and error correction after converting RF signal inputted at DVD regeneration into digital data.
TC90A19F uses external memory(DIC2, 4M DRAM, KM48C512BLJ) as buffer as well as for error correction and carries out Variable Bit Rate transfer function. VBR function uses the external buffer as buffer to absorb the difference of transfer rate occurring because the transfer rate of disc playback is faster than data transfer rate demanded by MPEG decoder(Video/Audio Signal Process Chip).
In case of general disc refresh, the memory is almost filled up periodically. It is because Write rate to memory after disc playback and signal process is faster than Read rate of MPEG decoder. When the memory is filled, this status is reported by interrupt to main micom, which controls the servo to kick back the pick-up to the previous track after memorizing the last data read from disc until now. It takes some times to jump to the previous track and return to the original position(jump location) again. The memory will have an empty space because MPEG decoder reads out data of memory.
When the memory has an empty space, where data can be processed and written and the pick-up correctly gets to the original location(before kick back location) again, it reads data again and avoids the interrupt of data read previously.
The basic operation repeats to perform (disc data read --> memory full --> move pick-up to previous track --> disc data read --> memory full --> move pick-up to previous track) as described above.

7-4-2 DVD DATA PROCESSOR BLOCK DIAGRAM

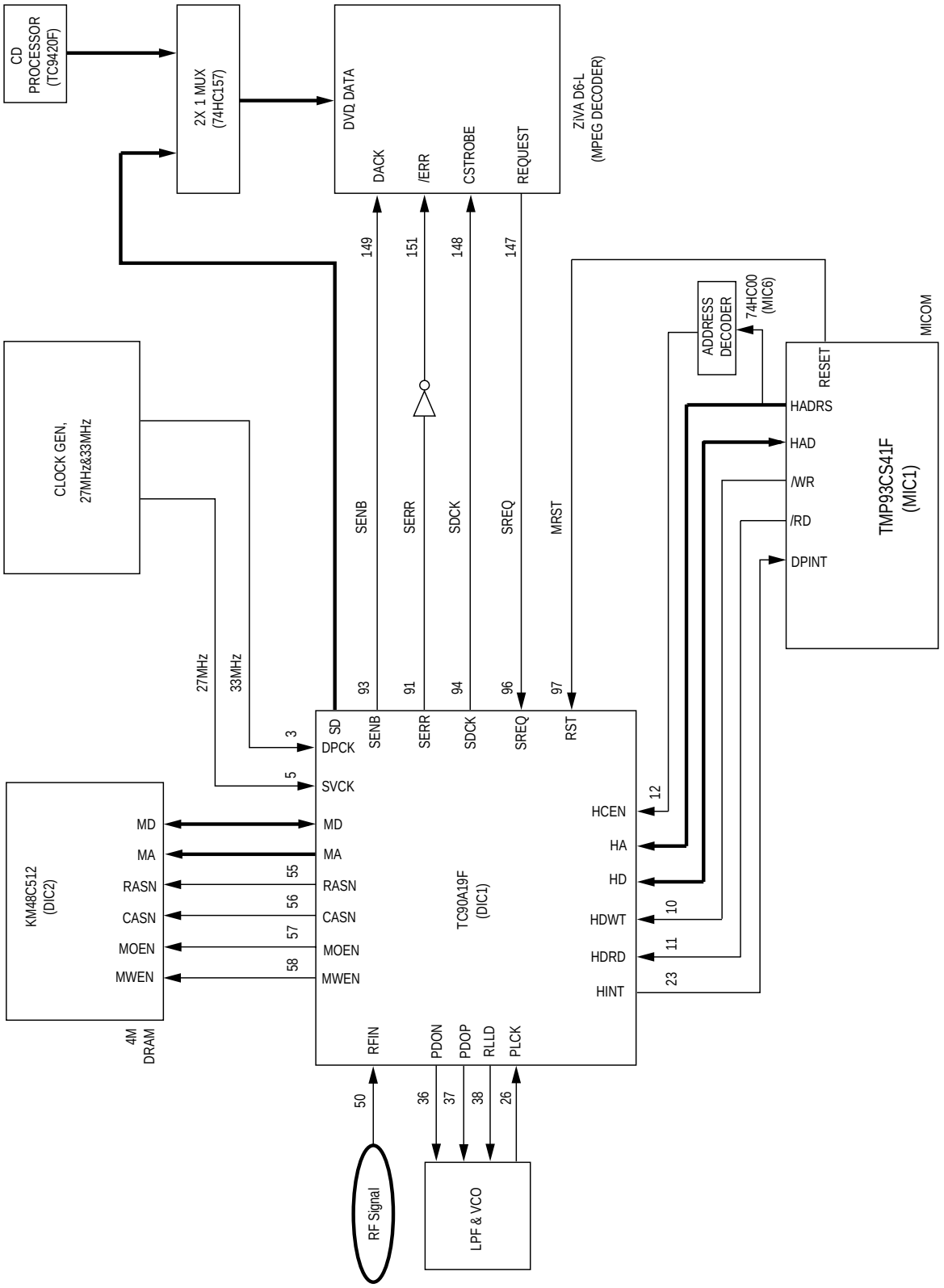
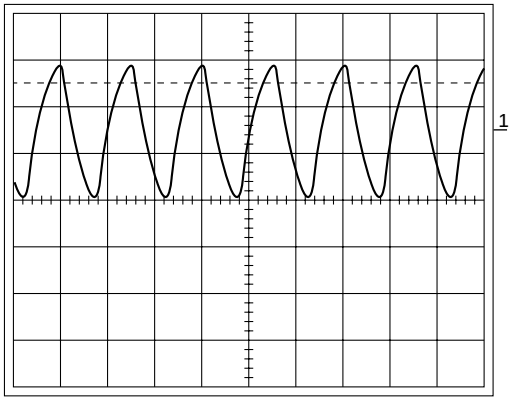


Fig. 7-18

7-4-3 Waveform description

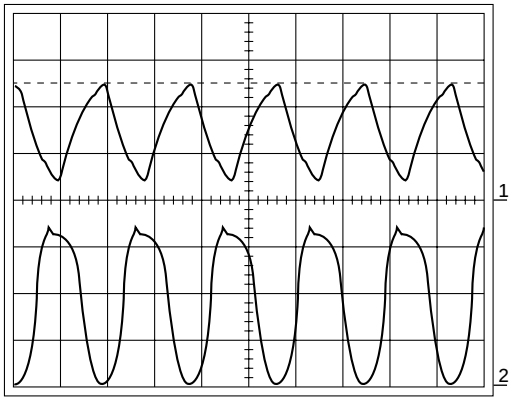
It is used for internal digital signal process as 33MHz clock input waveform of DIC1 (TC90A19F) and carries out swing in 1.4V level on the basis of DC level 1.65V.



• CH1 : DPCK1(DIC1-3, 33MHz input clock)

Fig. 7-19

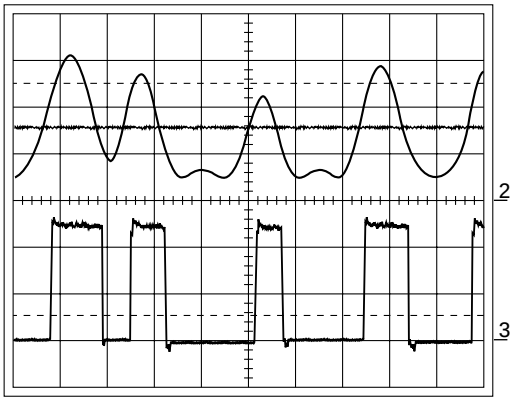
It is used for PLL and CLV control as 27MHz servo clock input and output waveform of DIC1. The input swings in approx. 2V of amplitude and the output swings in 3.3V.



• CH1 : SVCKI (DIC1-5)
• CH2 : SVCKO (DIC1-6)

Fig. 7-20

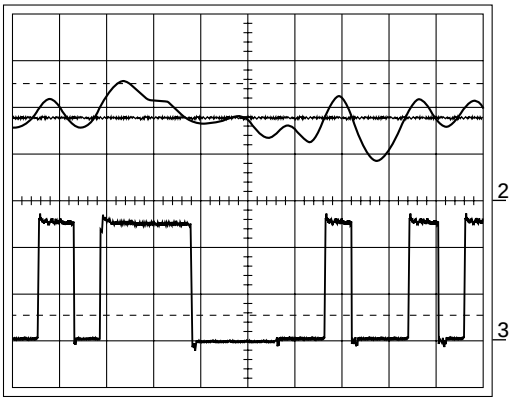
CH1 is RF signal waveform inputted to DIC1 and inputted with 2.5V of amplitude on the basis of approx. 1.65V level. If RF signal is higher than slice level, CH2 of slice level is cut logic “1”(HIGH) and if lower, logic “0”(LOW) thus converted into digital data. CH3 indicates a waveform that RF signal is cut by slice level and converted into digital data.



• CH1 : RFIN(DIC1-50, RF Input signal)
• CH2 : SLCO (DIC1-42, Slice level)
• CH3 : ED7 (DIC1-34, Sliced data of RF signal)

Fig. 7-21

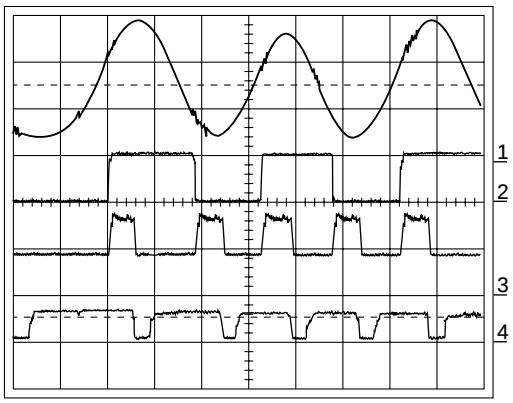
CH1 is RF signal waveform at refresh the error area of disc. It shows RF waveform swing lower than slice level. At the end, this part is displayed as error which is recovered to the original data by error correction signal of DIC1.



- CH1 : RFIN(at refreshing small error area of disc)
- CH2 : SLCO (Slice level)
- CH3 : ED7 (Sliced and outputted data of RF signal)

Fig. 7-22

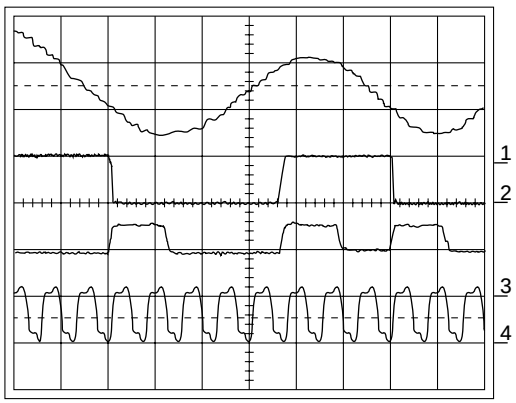
It shows error signal output, comparing PLL clock and phase difference in DIC1 when RF signal is inputted. The phase difference signals is inputted into VCO after summing in external PLL circuit of DIC1. VCO changes PLL clock frequency according to input voltage.
The middle frequency of external PLL circuit is approx. 27MHz and a clock(DIC1-26) locked by PLL on the basis of 27MHz may be shown at DVD playback.



- CH1 : RFIN(DIC1-50, RF Input signal)
- CH2 : SLCO (DIC1-34, Sliced data)
- CH3 : PDON (DIC1-36, Phase difference signal)
- CH4 : PDOP (DIC1-37, Phase difference signal)

Fig.7-23

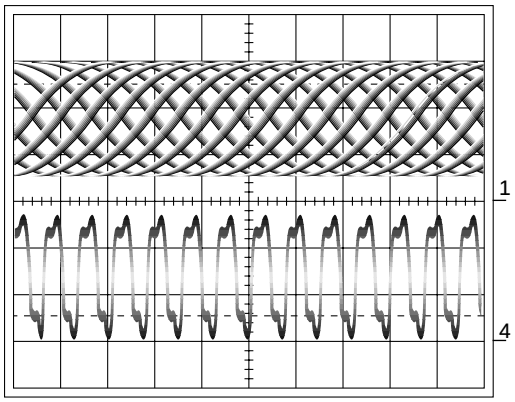
PLL lock at DVD playback



- CH1 : RFIN(DIC1-50, RF Input signal)
- CH2 : SLCO (DIC1-34, Sliced data)
- CH3 : PDON (DIC1-36, Phase difference signal)
- CH4 : PLCK (DIC1-26, PLL clock)

Fig. 7-24

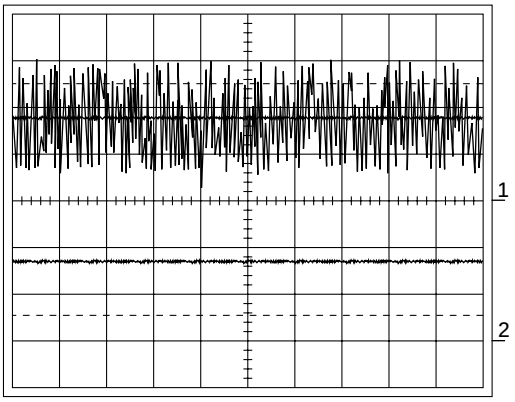
A clock locked by PLL on the basis of input RF signal, PLL clock and trigger may be shown at DVD playback. The eye of RF signal is open in PLL lock state.



- CH1 : RFIN(DIC1-50, RF Input signal) (Vp-p is approx. 2.5V)
- CH4 : PLCK (DIC1-26, PLL clock)

Fig. 7-25

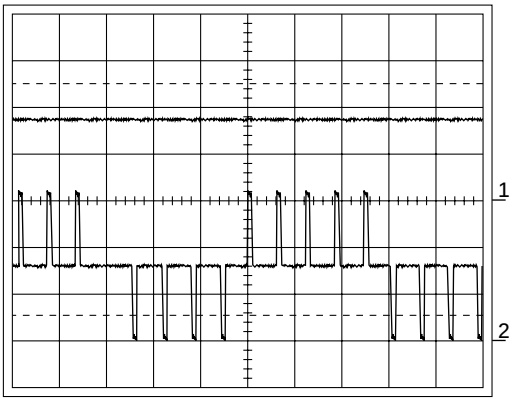
It shows RF signal and RLLD signal waveform at DVD refresh and RLLD waveform is regular as 1.65V. If a serious error occurs in disc, RLLD signal is outputted as correction signal and enters PLL control system after summing with phase difference signal.



- CH1 : RFIN(DIC1-50, RF Input signal)
- CH2 : RLLD (DIC1-38, RLLD signal at disk refresh)

Fig. 7-26

RLLD signal is ouputted at disc halt or occurrence of serious error.



- CH1 : RFIN(DIC1-50, RF Input signal)
- CH2 : RLLD (DIC1-38, RLLD at disc halt or occurrence of serious error)

Fig. 7-27

Because RF signal, external VCO input voltage and VCO control voltage swings terribly at disc halt, PLL ouput clock changes largely.(PLL not unlock state)

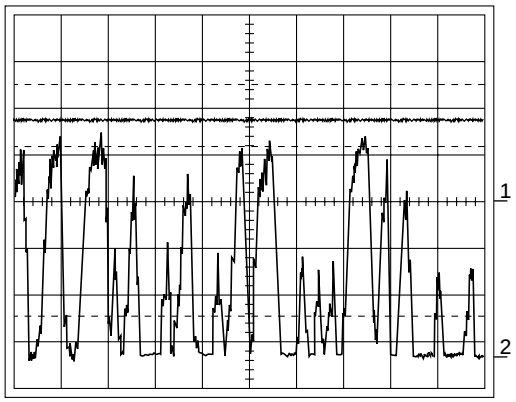


Fig. 7-28

- CH1 : RFIN(DIC1-50, RF Input signal at disc halt)
- CH2 : VCO control signal (DD1-3, Variable capacitance diode)

The input voltage of VCO becomes a regular voltage level(approx. 3.59V in Figure) at DVD playback and VCO outputs PLL clock depending on this control voltage. The input voltage of VCO swings a little and appears as frequency variation of VCO as much as change amount. As the control voltage of VCO is higher, PLL clock frequency becomes high.

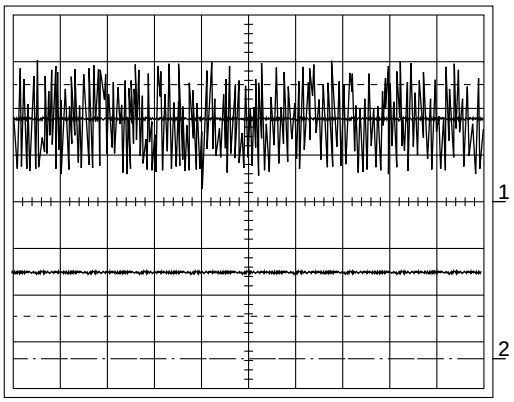


Fig. 7-29

- CH1 : RFIN(DIC1-50, RF Input signal at disc playback)
- CH2 : VCO control signal (DD1-3, Variable capacitance diode)

After the error-correcting process of input RF signal in DIC1 it makes the acknowlegde signal of CH2 LOW and outputs data (CH4).

when MPEG decoder(Video, Audio signal process chip) falls the request signal to 0(LOW) and demands data. The data acknowledge signal of CH2 and data of CH4 are synchronized with BSTCLK(CH3) and outputted. BSTCLK of CH3 is made by division of 33MHz into 16.

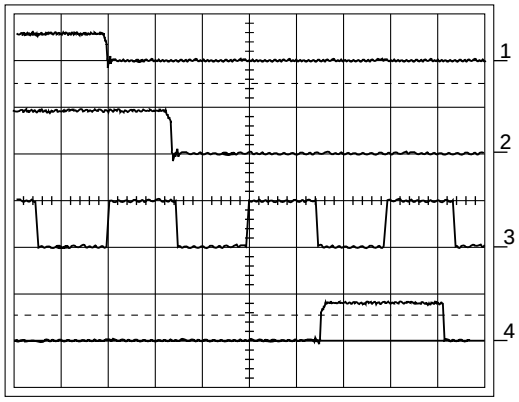
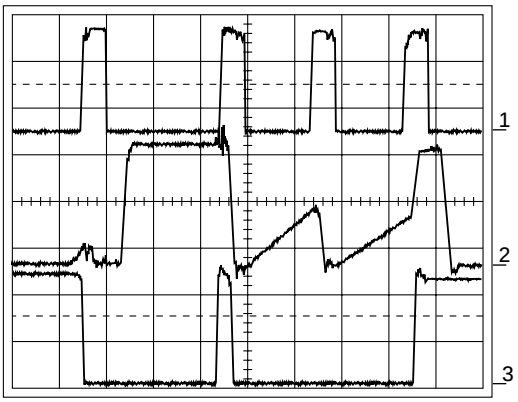


Fig. 7-30

- CH1 : PVSREQ (DIC1-96, Data request signal from DVD1)
- CH2 : PVSACK (DIC1-93, Output data acknowledge signal)
- CH3 : BSTCLK (DIC1-94, Output clock)
- CH4 : PVSIN (DIC1-81~84,87~90, Output data)

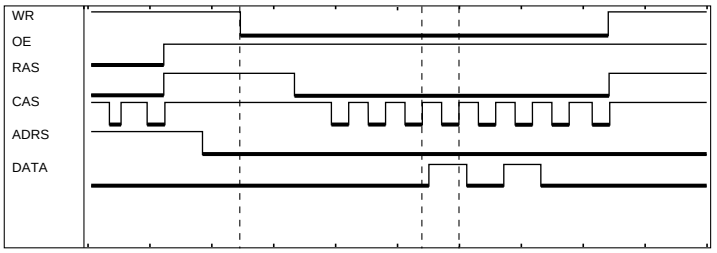
DIC1 shares the data bus of micom with other devices(A/V Decoder, EPROM, SRAM). CH2 shows the measurement of a signal line of data bus. The inclining and rising part in CH2 indicates high impedence state after data bus floating.The data bus is pulled up by 4.7K resistance.



- CH1 : ALE (MIC4-11, Address latch enable signal)
- CH2 : HAD0-7 (MIC4-2 to 9, Main micom address and data multiplexed bus)
- CH3 : HA0-7 (MIC4-19 to 12, Main micom addreess 0-7)

Fig. 7-31

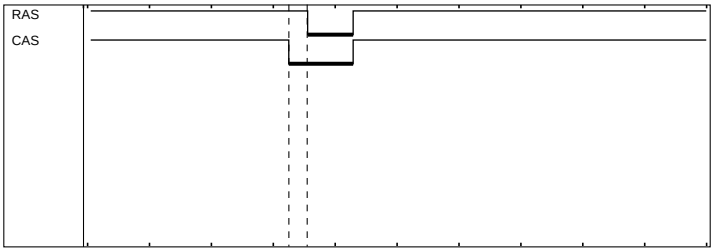
It shows access in fast page mode as waveform when DIC1 accesses external memory(4Mbit DRAM) at DVD refresh.



- WE : Write enable(DIC2-7)
- OE : OUTPUT ENABLE (DIC2-22)
- RAS : RAW ADDRESS STROBE (DIC2-8)
- CAS : COLUMN ADDRESS STROBE (DIC2-23)
- ADRS : ADDRESS
- DATA : DATA

Fig. 7-32

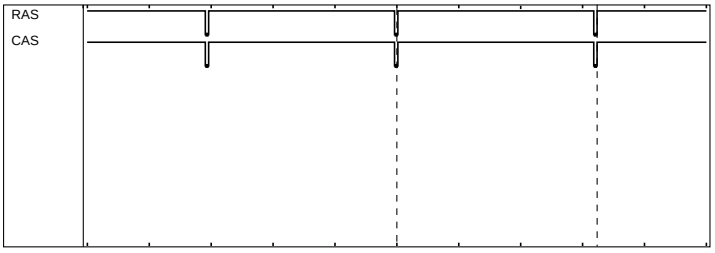
It shows the external memory refresh of DIC1 and uses CAS Before RAS Refresh.



- DIC2 (4MDRAM) REFRESH TIME

Fig. 7-33

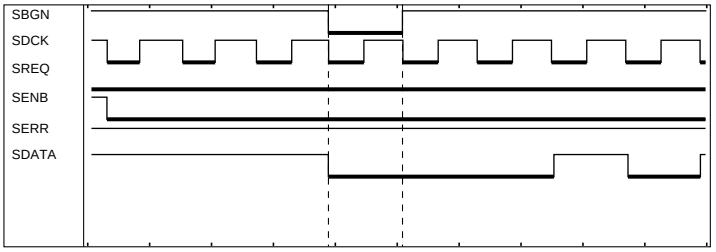
It shows refresh per approx. 31 usec as measurement of refresh waverform outputted by DIC1 in large timing.



Refresh time(Period) of DIC2(4MDRAM)

Fig. 7-34

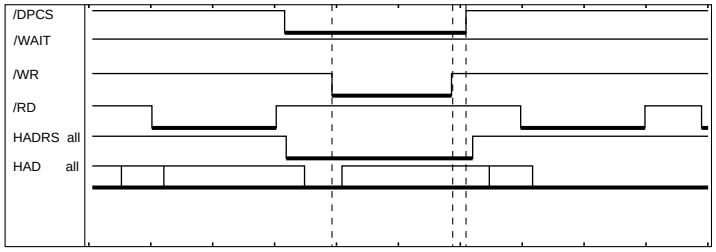
It measures the timing that data processed in DIC1 at DVD playback enters MUX(BIC8, BIC9)



- CH1 : SBGN (DICI-92, SECTOR BEGIN)
- CH2 : SDCK (DICI-94, CLOCK)
- CH3 : SREQ (DICI-96, DATA REQUEST)
- CH4 : SERR (DICI-91, DATA ERROR)
- CH5 : SDATA (DICI-81~84, 87~90, DATA)

Fig. 7-35

It shows the timing of control signal, address and data bus when micom accesses DIC1.
So to speak, timing at writing a value in the internal register of DIC1.



- CH1 : DPCS (DIC1-12, TC90A19F chip select)
- CH3 : WR (DIC1-10, TC90A19F register write)
- CH4 : RD (DIC1-11, TC90A19F register read)
- CH5 : HADRS (DIC1-24,25, Micom address bus)
- CH6 : HAD (DIC1-13~20, Micom data bus)

Fig. 7-36

It shows a waveform that DIC1 requests a management to micom by interrupt generation.
Micom recognizes the interrupt and writes a value in register of DIC1 to respond (instruction) for interrupt. Micom accesses DIC1 five times in Figure. Micom recognizes the operation of chip and makes a necessary instruction after receiving the interrupt generated in DIC1 and accessing the corresponding chip.

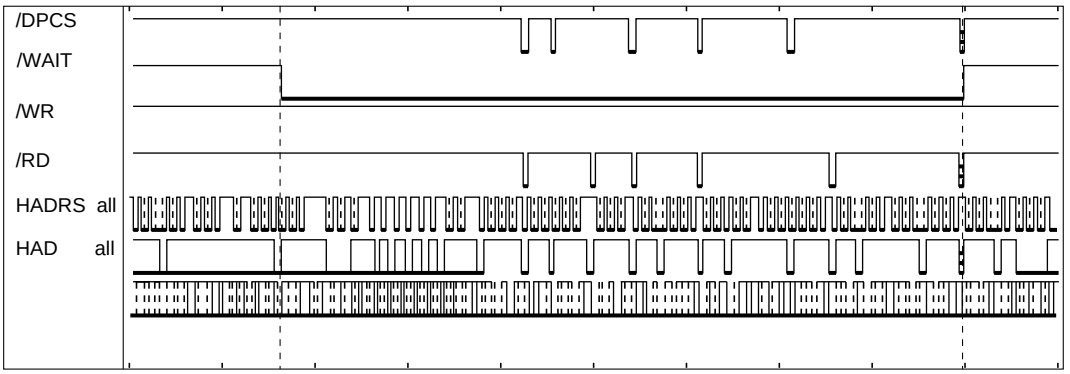


Fig. 7-37

- CH1 : DPCS (DIC1-12, TC90A19F chip select)
- CH2 : DPINT (DIC1-23, TC90A19F interrupt output)
- CH3 : WR (DIC1-10, TC90A19F register write)
- CH4 : RD (DIC1-11, TC90A19Fregister read)
- CH5 : HADRS (DIC1-24,25, Micom address bus)
- CH6 : HAD (DIC1-13~20, Micom data bus)

7-5 VIDEO

7-5-1 Outline

VIC1 does RGB encoding, copy guard processing and D/A conversion of 8bit video data inputted from BIC1 (A/V decoder) by control of MIC1(Micom).
Video signal converted into analog signal is outputted via low pass filter, amplifier and buffer unit of rear unit analog part.
Output signals are Y/Cr/Cb(or RGB), Y/C, composite video and because the processig course of each signal is same, the explanation is made on the basis of composite video signal.

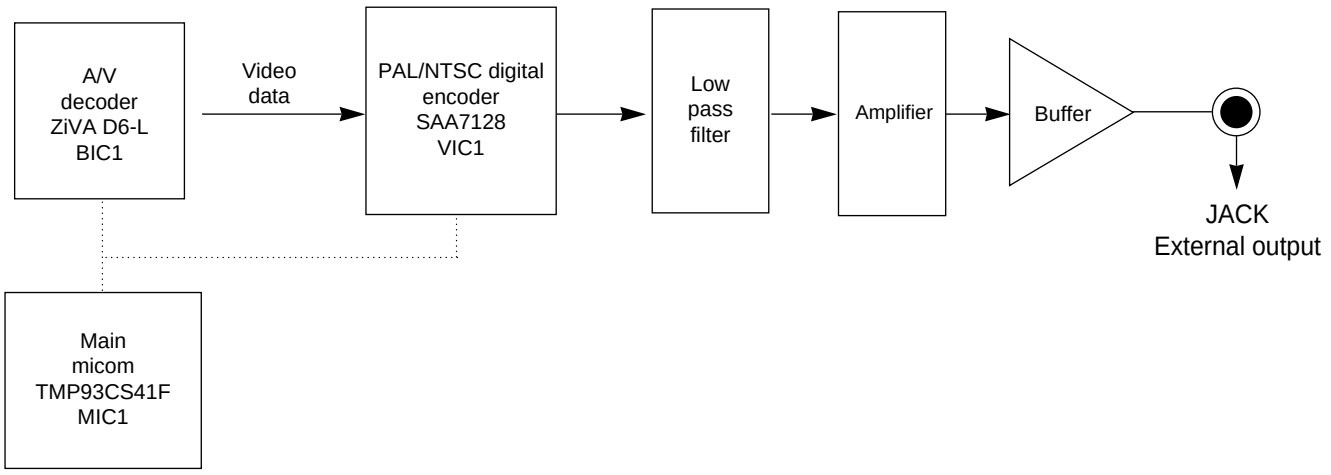


Fig. 7-38 Video output block diagram

7-5-2 NTSC/PAL digital encoder (VIC1;SAA7128)

HSYNC and VSYNC outputted from VIC1 are the synchronous signals with the video signal and control the output timing of 8bit digital video signal (VDATA[7:0]) of ITU-R656 format.
When the ITU-R656 format muxed with Cr/Cb/Y signal is inputted, first demuxing is performed to release the format. The demuxed signal obtains each Y/Cr/Cb, Y, C signal via Luminance processing, Chroma processing. At that time, a signal transformation and addition are made for copy guard processing and obstruct the normal signal copy. The composite signal is formed by adding of luminance and chrominance signal among them and Y/Cr/Cb signal is encoded to RGB by control of micom. RGB output is for the SCART output in Europe.
The above signals, that is Y/Cr/Cb (or RGB) Y/C, composite video signals are outputted from VIC1 through D/A converter.

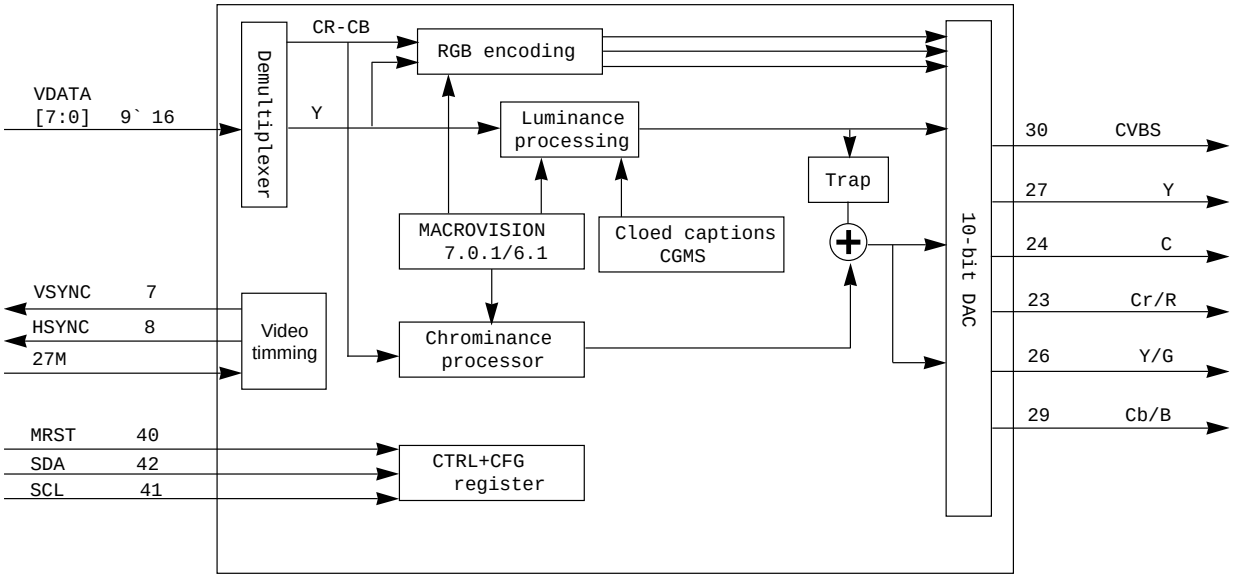


Fig. 7-39 VIC1 (SAA7128) Internal block diagram

7-5-3. Low pass filter VF1, VF2

VF1 and VF2 remove quantization noise occurring in the course of D/A conversion as low pass filter with cut-off frequency of 6.75MHz. VR5 and VR6 are input impedances and convert the level of subcarrier.

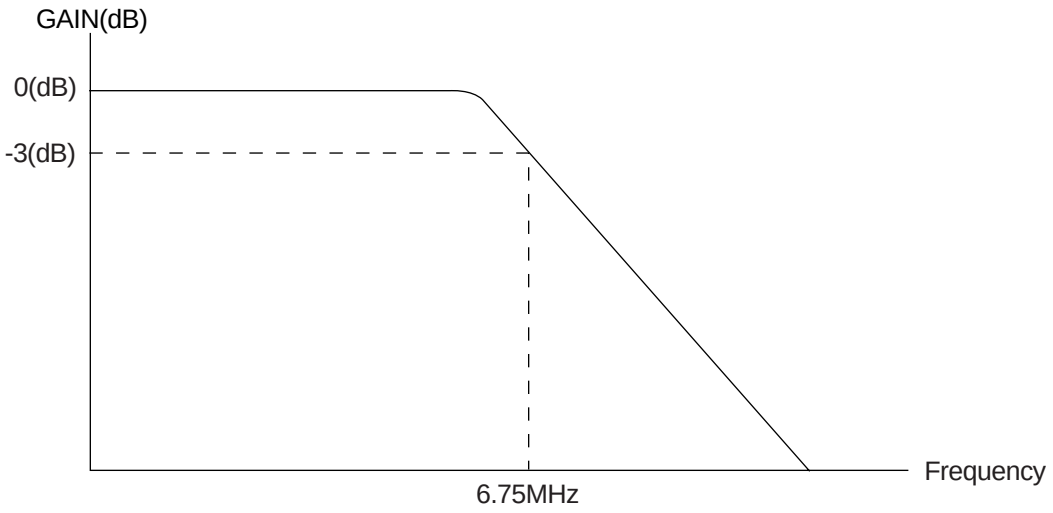


Fig. 7-40 Frequency features of VF1,VF2

7-5-4 Amplifier

VQ1 is buffer and the gain is amplified through VQ2, VQ3. The main factors which determine the gain are VR10 and VR11, and the gain is 1+VR11/VR10. VR12 is the main factor that determines the offset of output signal of amplifier unit and the rate is approx. VR 12/(VR10+VR11)

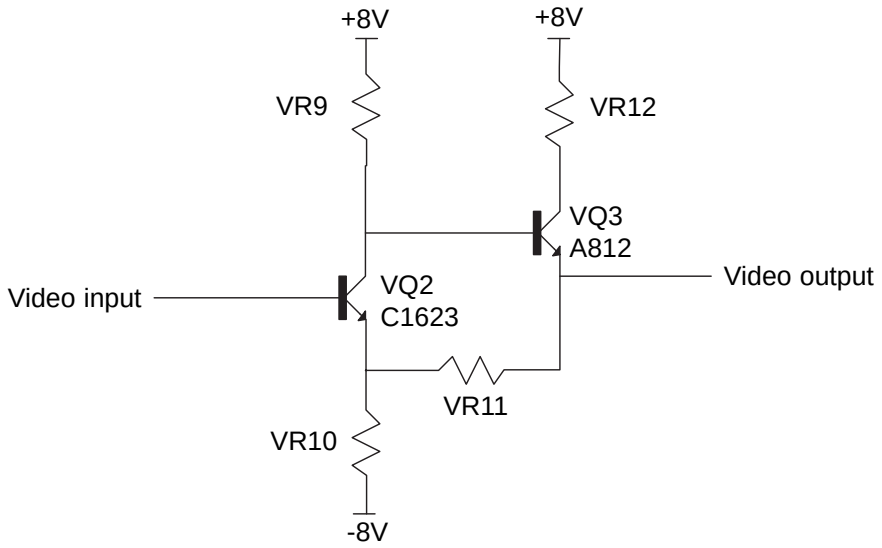


Fig. 7-41 Amplifier

7-6-5 Buffer

VQ4, VQ5, and VQ6 are buffer unit and circuit that double the drive power so as to output without signal conversion when connected with exterior devices. VC11 is an AC coupling capacitor, VR19 is an essential impediance at video signal interface and being matched with the impediance in the input block of exterior devices determines the level of video signal.

7-6 SERVO

7-6-1 Outline

SERVO system of DVD is divided into Focusing SERVO, Tracking SERVO, SLED Linked SERVO and CLV SERVO(DISC Motor Control SERVO).

1. Focusing SERVO
   Focuses the optical spot output from object lens onto the disc surface. Maintains a uniform distance between object lens of Pick-up and disc (for surface vibration of disc).

2. Tracking SERVO
   Make the object lens follow the disc track in use of tracking error signal (created from Pick-up).

3. SLED Linked SERVO
   When the tracking actuator inclines outwardly as the object lens follows the track during play, the SLED motor moves slightly (and counteracts the incline).

4. CLV SERVO (DISC Motor Control SERVO)
   Controls the disc motor to maintain a constant linear velocity (necessary for RF signal).

7-6-2 Block diagram

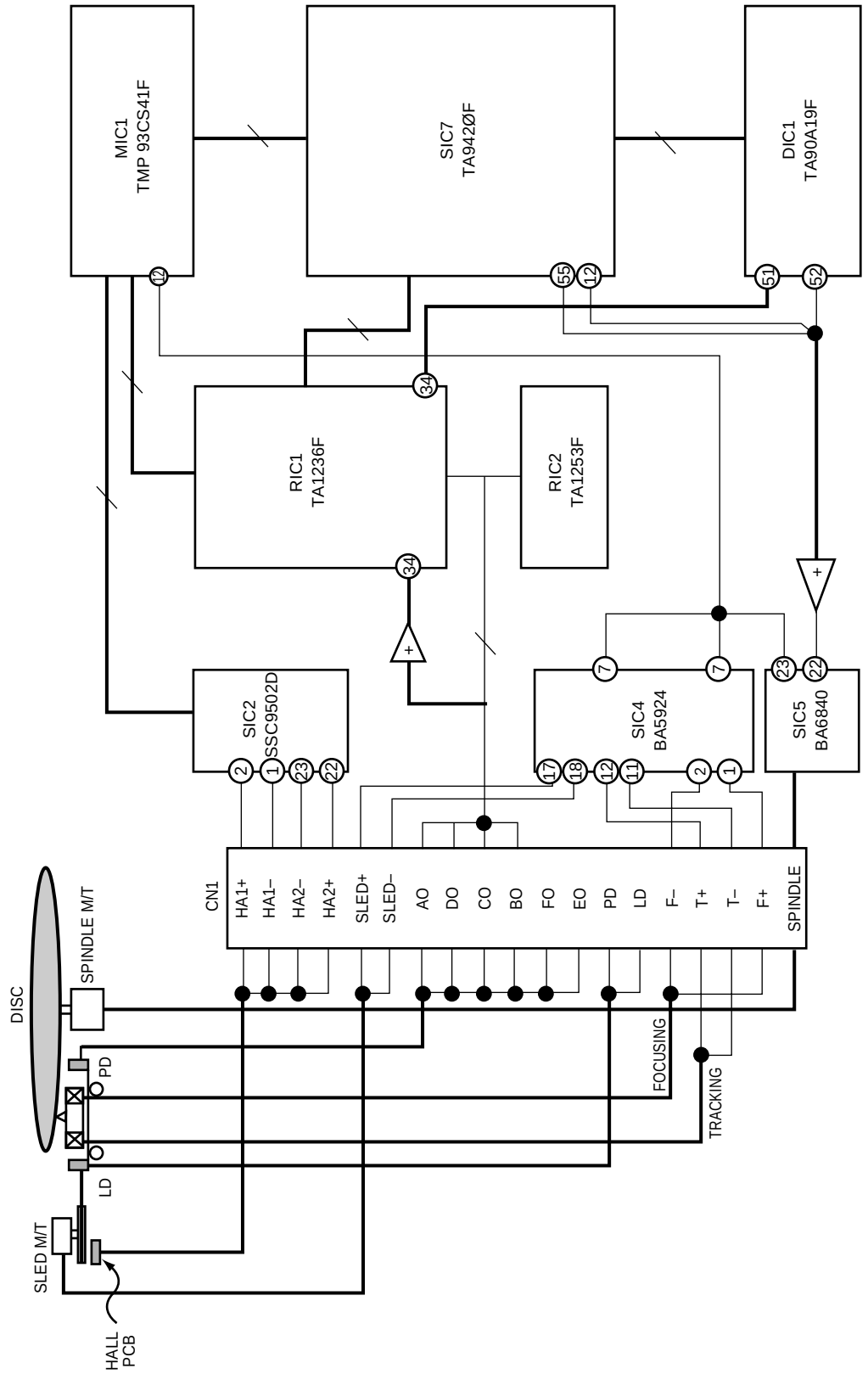


Fig. 7-42

7-6-3 Operation

1) FOCUSING SERVO

(1). FOCUS INPUT

The focus loop is changed from open loop to closed loop, and the triangular waveform moves the object lens up and down (at pin 48 of SIC7 during Focus SERVO ON.) At that time, S curve is input to pin 43 of SIC7.

SBAD (pin 44 of SIC7) signal, summing signal of PD 1, B, C, D, is generated, and zero cross(2.1V) point occurs when S curve is focused and SBAD signal exceeds a preset,constant value. The focus loop is changed to closed loop, and the object lens follows the disc movement, maintaining a constant distance from the disc. (these operations are same in CD and DVD).

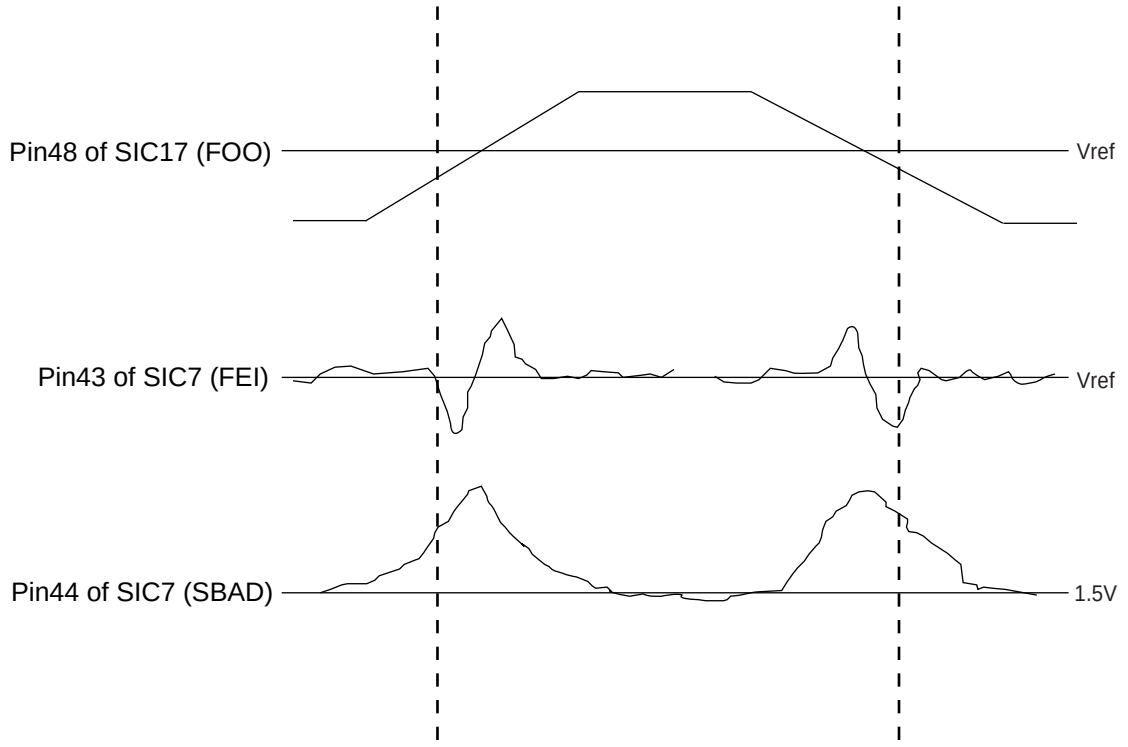


Fig. 7-43

(2). PLAY

When focus loop closes the loop during focus servo on, both pin 43 and pin 48 of SIC7 are controlled by VREF voltage(approx. 2.1V), and pin 1, 2 of SIC4 are approximately 4.5V.

2) TRACKING SERVO

(1). NORMAL PLAY MODE

(1) For DVD
Composite : The signal output from PD A, B, C, D of Pick-up, the tracking error signal (RIC2 pin 14) uses the phase difference of A+C and B+D in RIC2, and inputs to terminal 8 of RIC1. The signal is output to RIC1 pin 21, and input to SIC7 pin46(TEI). Then, it is output to SIC7 pin 49 via digital equalizer, and applied to the tracking actuator through SIC4. Pins 46, 49 of SIC7 are controlled by VREF(approx. 2.1V) during normal play.
Meanwhile, DVD repeats the track jump from 1 to 4 in inner direction at normal play (because data- read speed from disc is faster than data output speed on screen).

(2) For CD, VCD

Receive the signal output through E, F of Pick-up, from RIC1, differently from DVD and make the tracking error signal through RIC1 pin21. The tracking error signal is similar to DVD.

• SEARCH Mode :

Search mode : Fine seek,(Moving the tracking actuator slightly little below 255 track) and coarse search, moving much in use of sled motor. The coarse search will be described in sled linked servo and now, the fine seek is explained shortly.
If the object lens is located near target, cut off the tracking loop and give the control signal as many as desired count to move the tracking actuator via SIC7 pin 49 terminal(TRO).

3) SLED LINKED SERVO

• Normal play mode

Move SLED motor slightly by means of PWM signal in SIC7 pin 54, as the tracking actuator moves along with track during play. Control to move the entire Pick-up as the tracking actuator moves.

• Coarse serach mode

In case of long-distance search(such as chapter serach), pin 48 uses sled FG (SIC2 pin 19, which is generated) by rotation of sled motor via hall PCB. Then, read ID and compute the existing track count after input of next track. If the existing track count is within fine seek range, tracking begins using fine seek.

4) CLV SERVO(DISC MOTOR CONTROL SERVO)

• For DVD mode

Input RF signal (from Pick-up) to DIC1 pin50. Detect SYNC signal from RF in DIC1, and output PWM signal to DIC1 pin 54 for constant linear velocity.

• For DC, VCD mode

Input RF signal (from Pick-up) to SIC7 pin 36, Detect SYNC signal from RF in SIC7, and output PWM signal to SIC7 pin 55 for constant linear velocity.

7-7 Audio

7-7-1 Outline

The audio data transmitted from A/V decoder(BIC1:ZiVA D6-L) are converted into analog signal via audio D/A converter and outputted through power filter and amplifier. DVD audio is outputted after division into two cases that only 2 channels(L/R channel) are used and 5.1 channel of AC-3 is used. CD and VCD are outputted with only 2 outputs(L/R channel).
If DVD of 2 channels is used, rear L/R channel, center channel and subwooder channel are mixed and outputted in 2 channels.
The digital signals(IEC-958 Output) outputted from A/V decoder (BIC1:ZiVA D6-L)are outputted to digital amp or AC-3 amp through optical jack(AJ4) and RCA jack(AJ3).

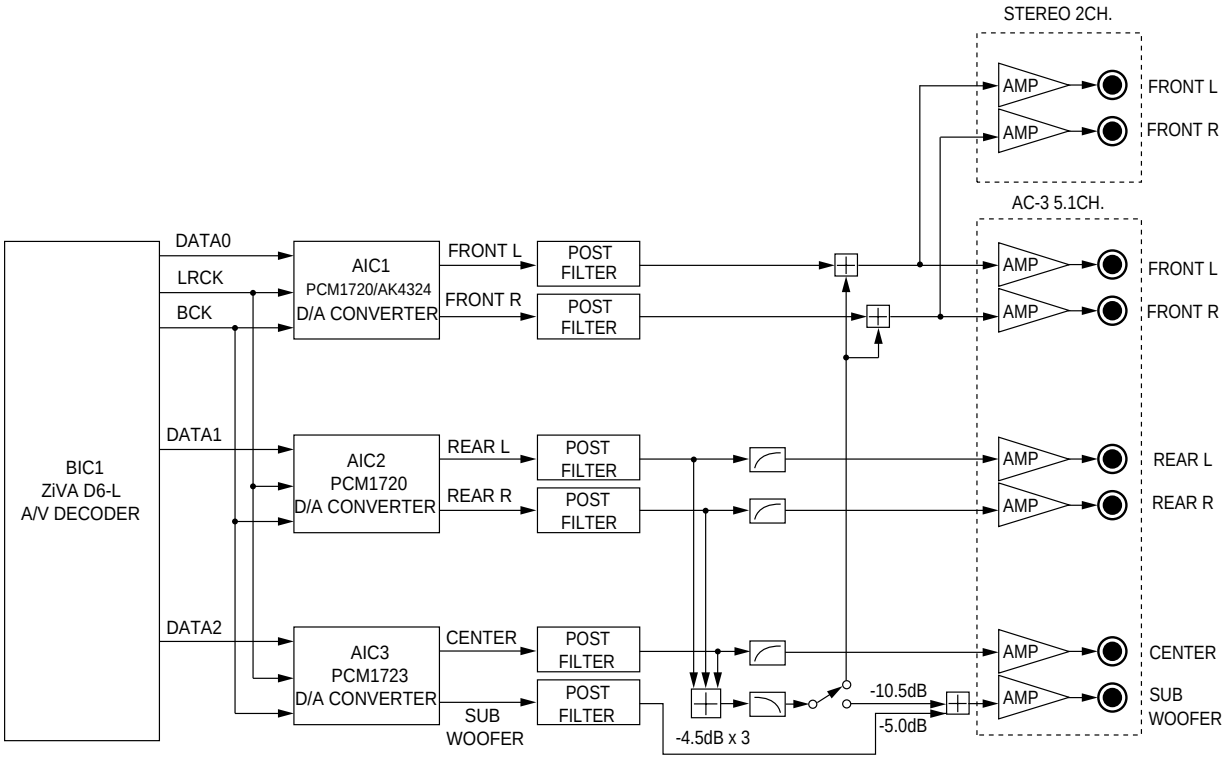


Fig. 7-44 Audio output Diagram

7-7-2 DVD audio output

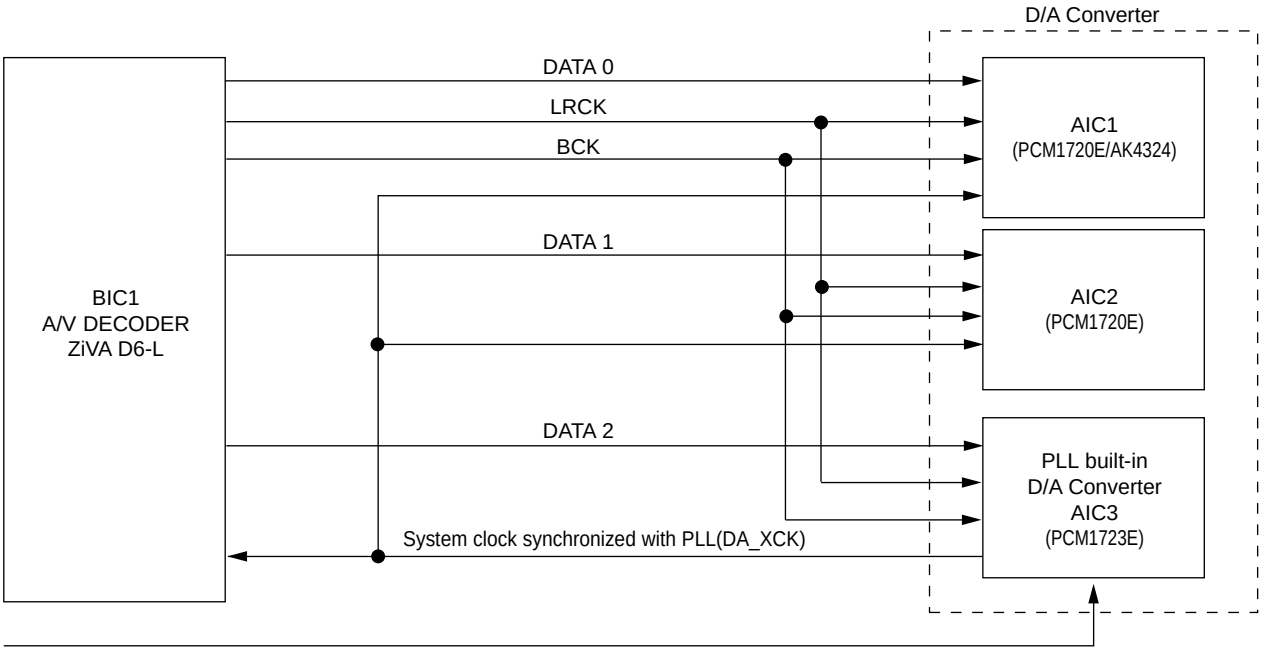


Fig. 7-45 Audio data and CLK

7-7-2(a) AC-3 5.1 channel

The system CLK generated by AIC3 built-in PLL circuit is provided for A/V decoder(BIC1) and audio D/A converter (AIC1, AIC2)and Sync. of each channel is agreed.
DVD audio data outputted from BIC1 A/V decoder are supplied to DATA0 for 2 channels and to DATA0-2 for 5.1 channel. Then, LRCK is outputted by 48KHz or 96KHz.
Front L/R channel is outputted in DATA0, rear L/R channel in DATA1 and center and sub woofer channel in DATA2. DATA0 data are outputted to front L/R channel after D/A conversion and filtering of AIC1(PCM1720/AK4324).
DATA1 data are ouputted by analog signal of D/A converter of AIC2(PCM1720E) and to rear L/R via HPF after filtering.
DATA2 data are converted into analog signal by D/A converter of AIC3(PCM1723E) and one channel is outputted by center output via post filter and HPF.
The other channel of AIC3(PCM1723E) is outputted by subwoofer signal through amplifier of -5.0dB and LPF.

7-7-2(b) Bass redirection(2 Channel down mixing)

If the user do not have sub woofer speaker and the disc is recorded by 5.1 channel, center, rear, sub woofer bass signal can be downmixed in 2 channel front L/R.
If there is a sub woofer speaker, it is outputted directly to subwoofer without down mixing.

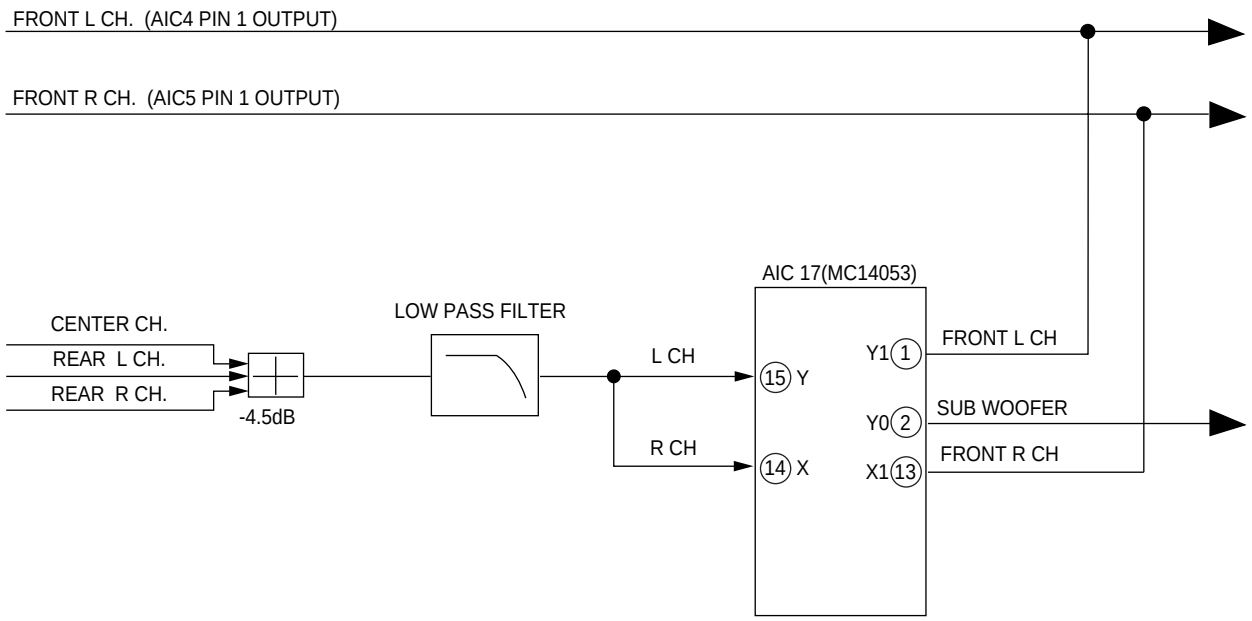


Fig. 7-46 2 Channel down mixing

The switch operations are carried out by AIC17(14053) in case of 2 Channel down mixing and SUB WOOFER speaker using.

	DOWN MIXING	THE USER USES SUB WOOFER
AIC17(10,11PIN) A,B	H	L
OUTPUT	AIC17(PIN 13,1) X1, Y1 MIXED L/R OUPUT	AIC17(PIN 2) Y0 (PIN2 SUB WOOFER OUTPUT)

Table 7-47 Down mixing output table

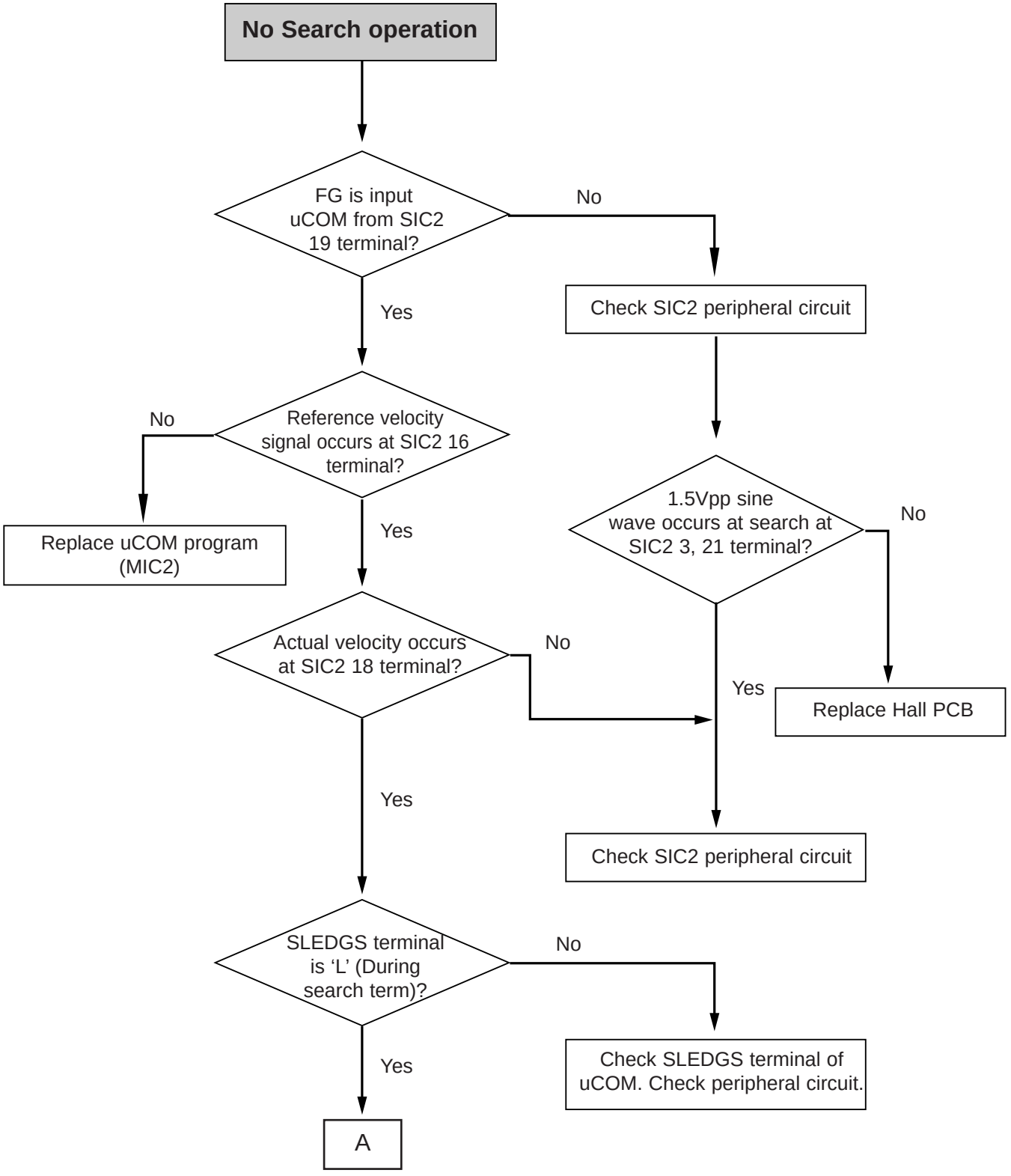
7-7-3 CD/VCD audio output

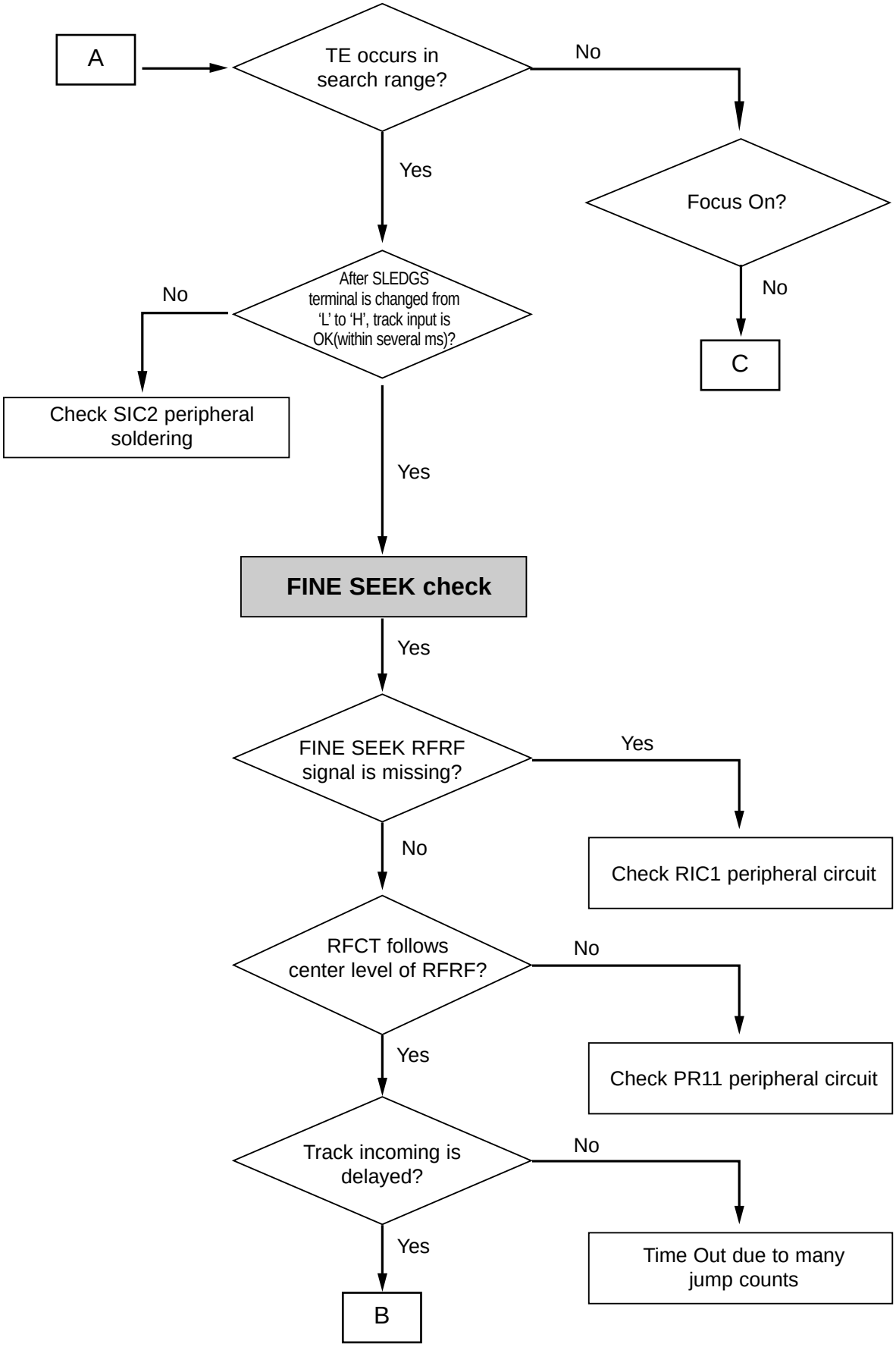
The audio of CD and VIDEO-CD bypasses the signals of SIC7(TC9420F) in BIC8,9 and BIC1 A/V decoder and outputs them to DATA0. Also they are outputted in stereo 2 channel(L/R channel) via D/A conversion and filtering of AIC1(PCM1720/AK4324).

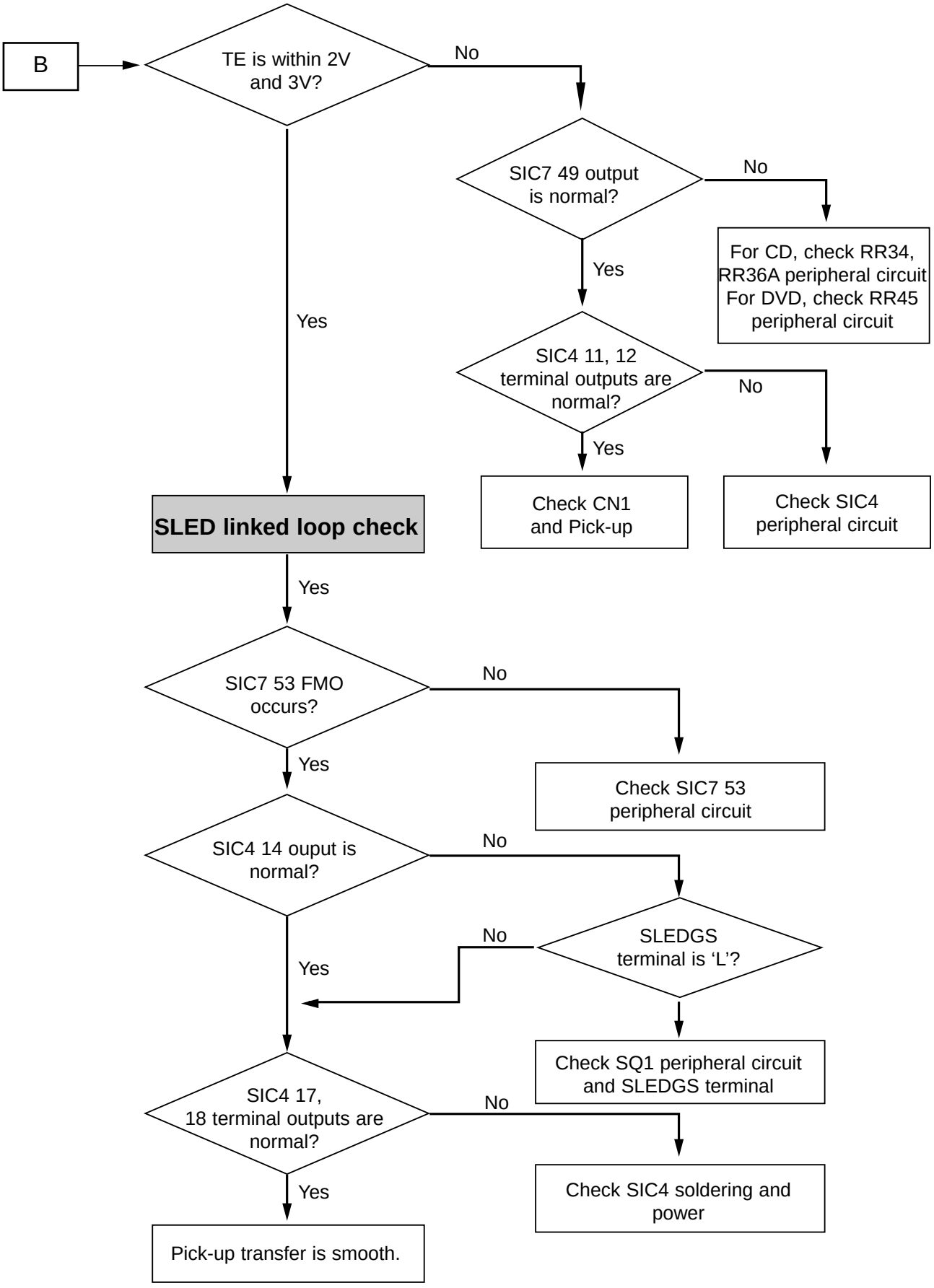
MEMO

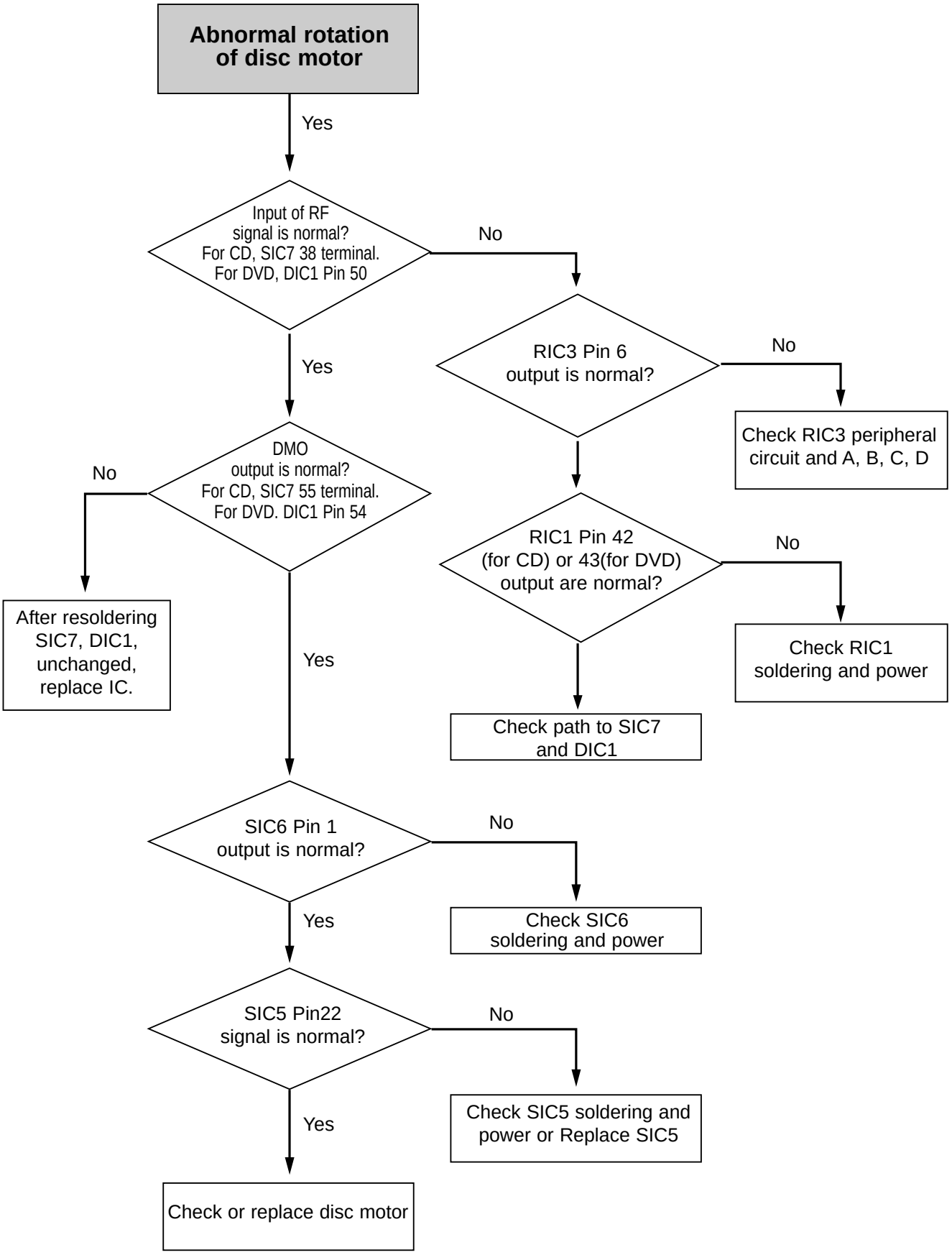
8. Troubleshooting

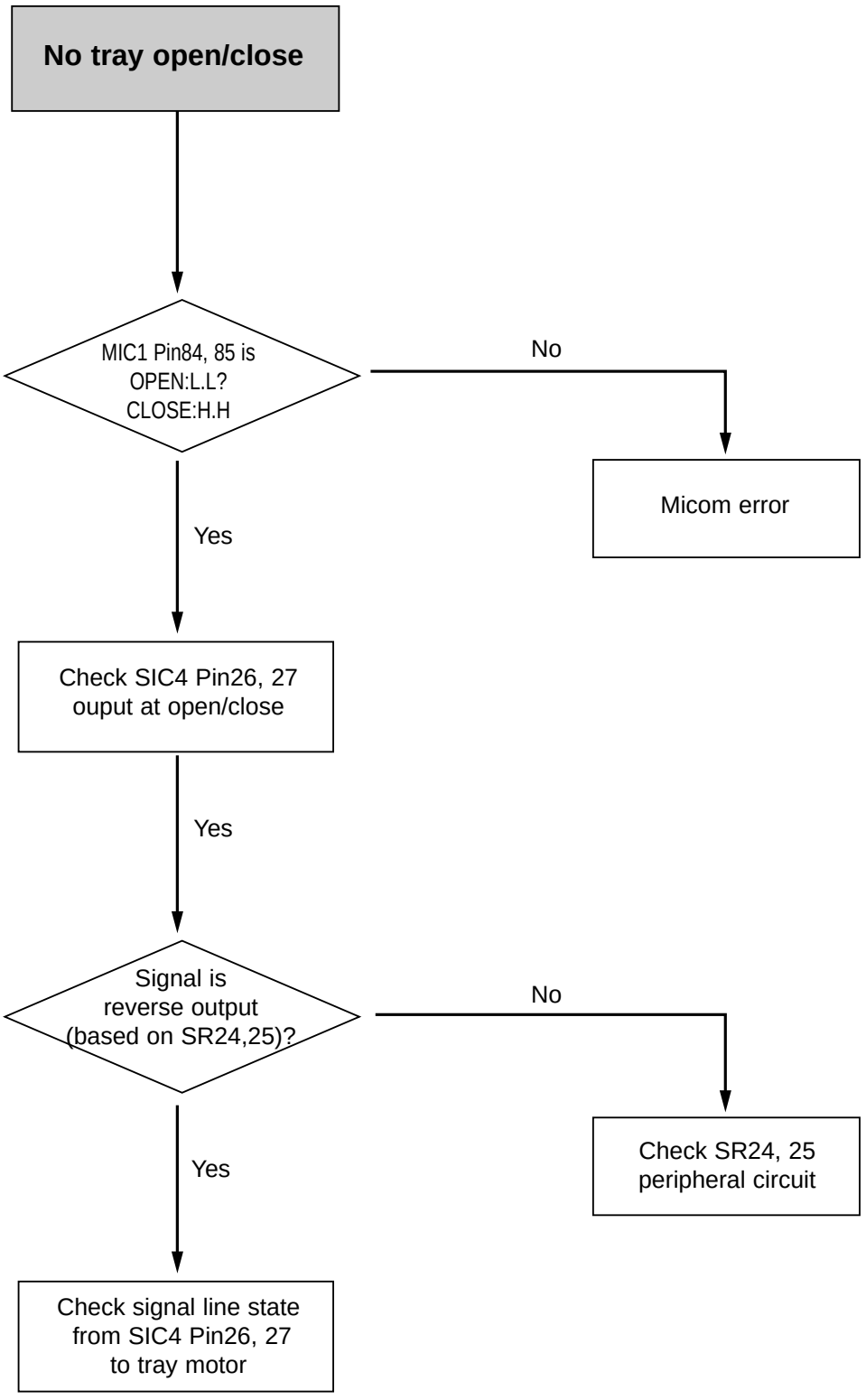
8-1. SERVO Thoubles

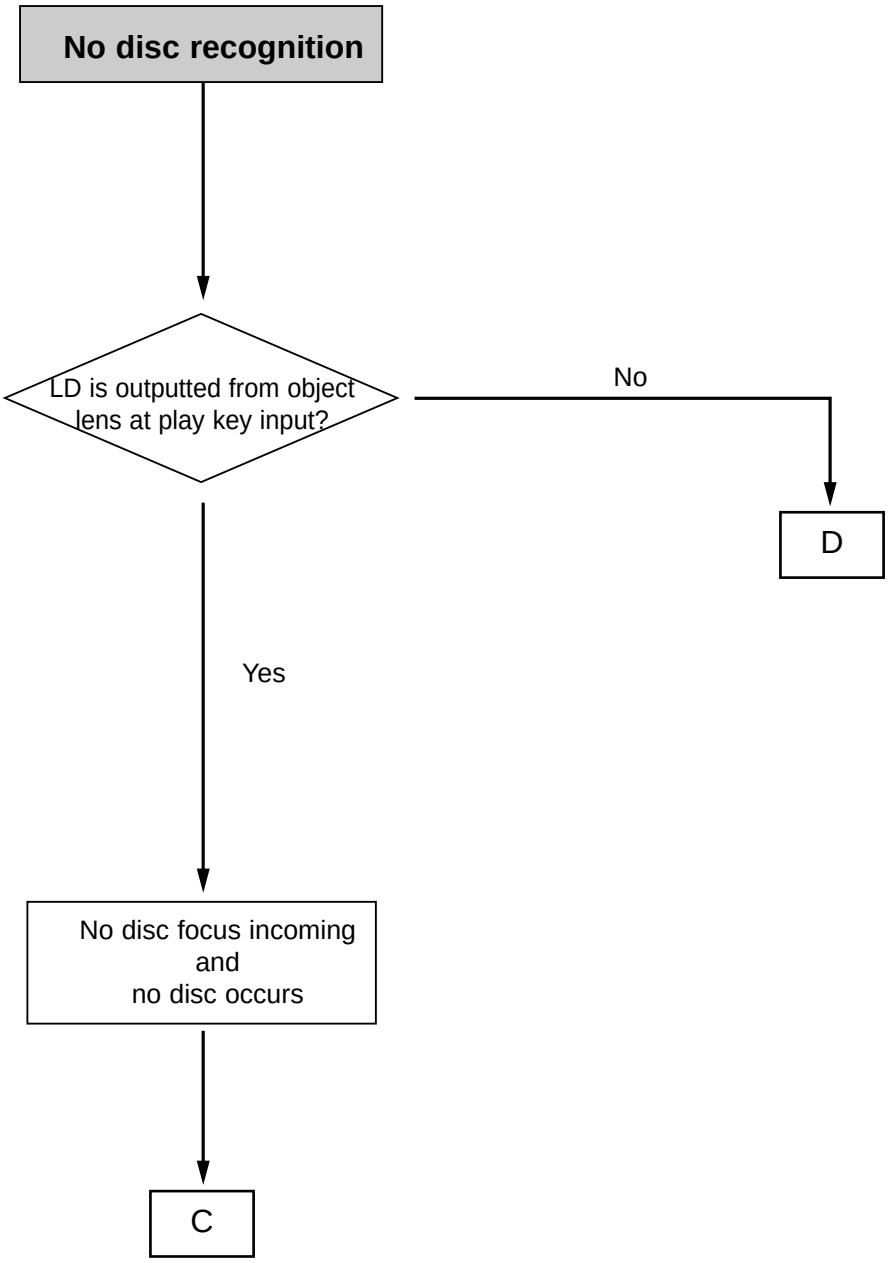


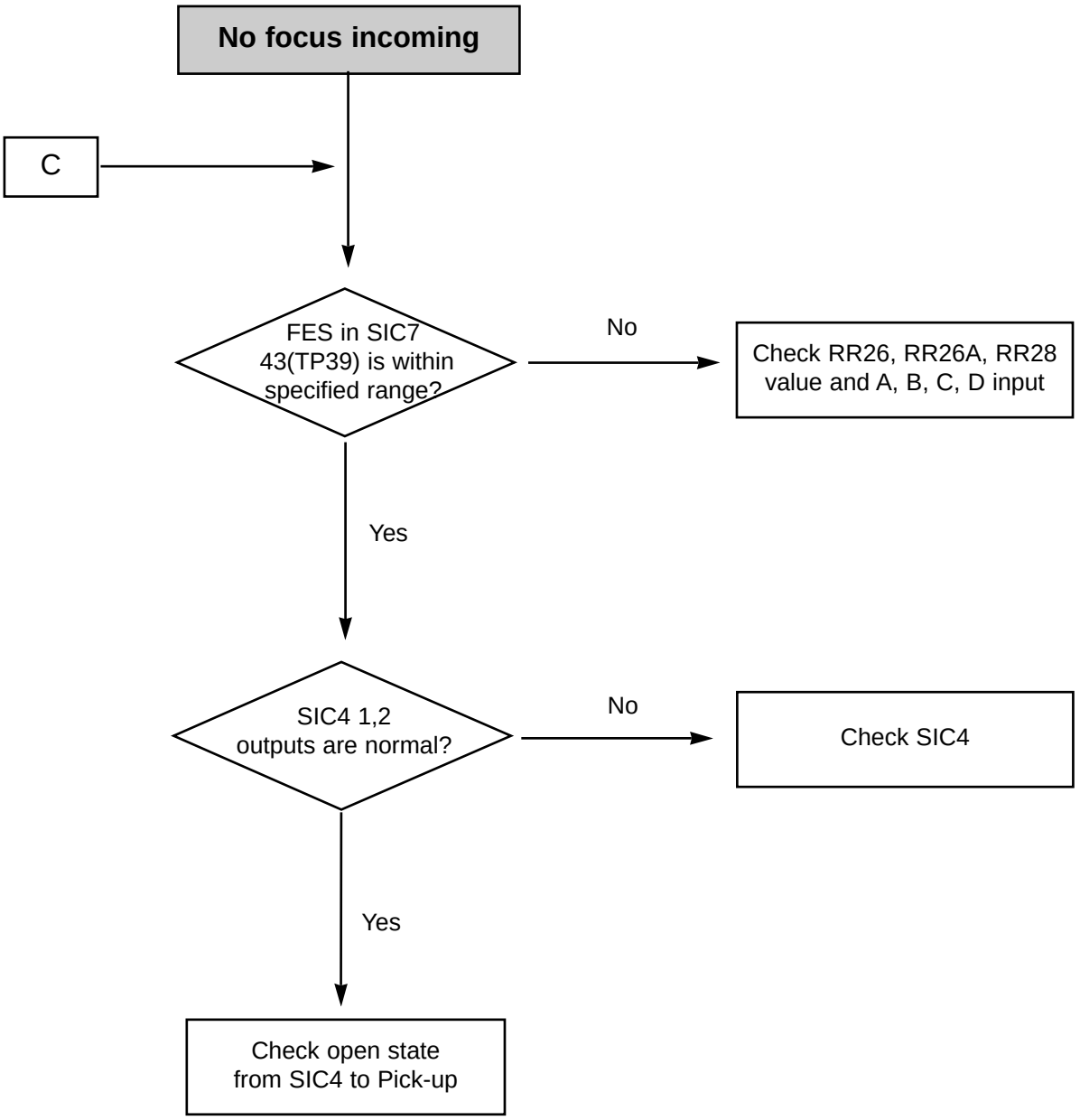

A
TE occurs in search range?
No
Yes
Focus On?
No
C
After SLEDGS terminal is changed from 'L' to 'H', track input is OK(within several ms)?
No
Check SIC2 peripheral soldering
Yes
FINE SEEK check
Yes
FINE SEEK RFRF signal is missing?
Yes
Check RIC1 peripheral circuit
No
RFCT follows center level of RFRF?
No
Check PR11 peripheral circuit
Yes
Track incoming is delayed?
No
Time Out due to many jump counts
Yes
B

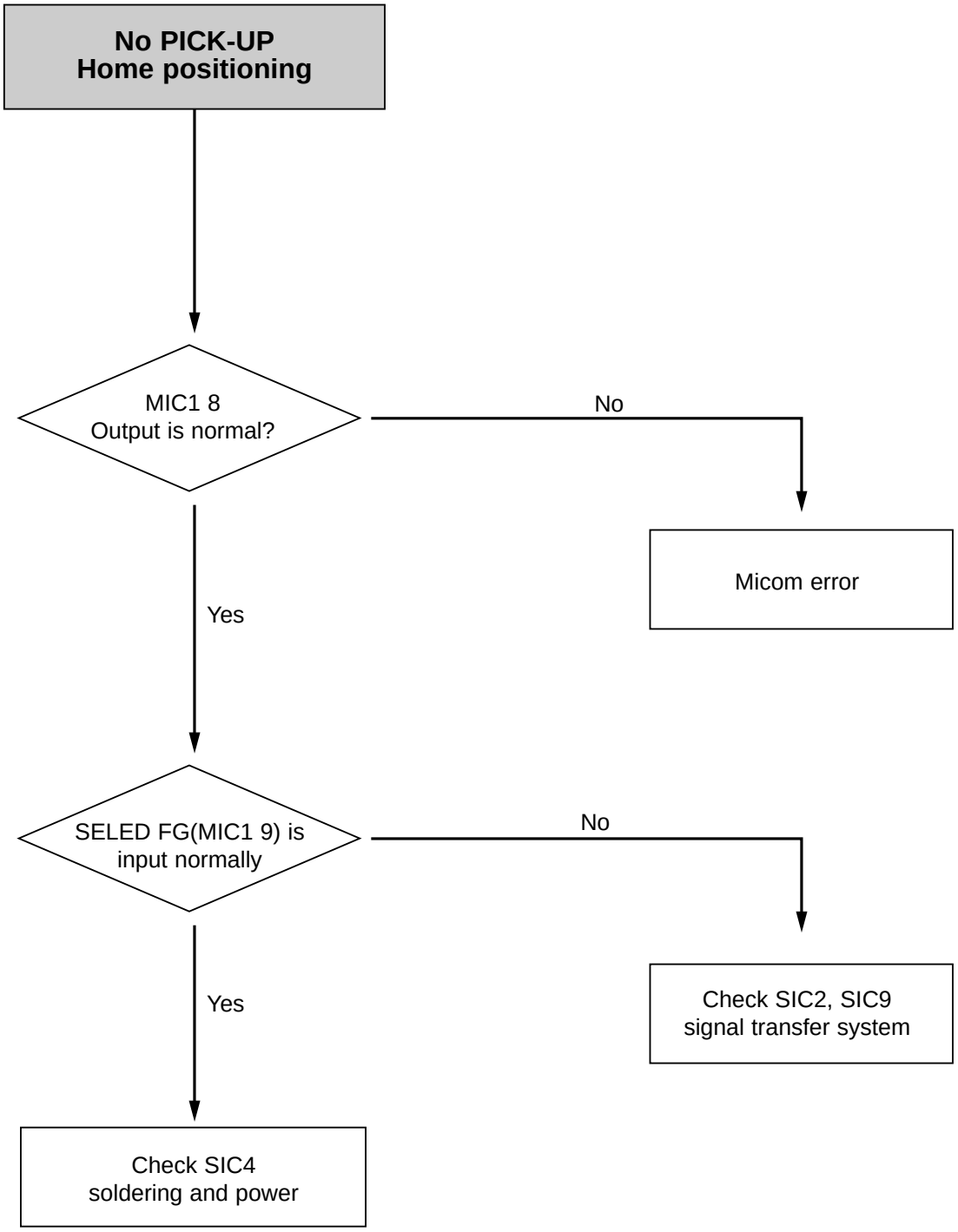

B
TE is within 2V and 3V?
No
Yes
SIC7 49 output is normal?
No
Yes
For CD, check RR34, RR36A peripheral circuit For DVD, check RR45 peripheral circuit
SIC4 11, 12 terminal outputs are normal?
No
Yes
Check CN1 and Pick-up
Check SIC4 peripheral circuit
SLED linked loop check
Yes
SIC7 53 FMO occurs?
No
Yes
Check SIC7 53 peripheral circuit
SIC4 14 ouput is normal?
No
SLEDGS terminal is 'L'?
No
Yes
Check SQ1 peripheral circuit and SLEDGS terminal
SIC4 17, 18 terminal outputs are normal?
No
Yes
Check SIC4 soldering and power
Pick-up transfer is smooth.

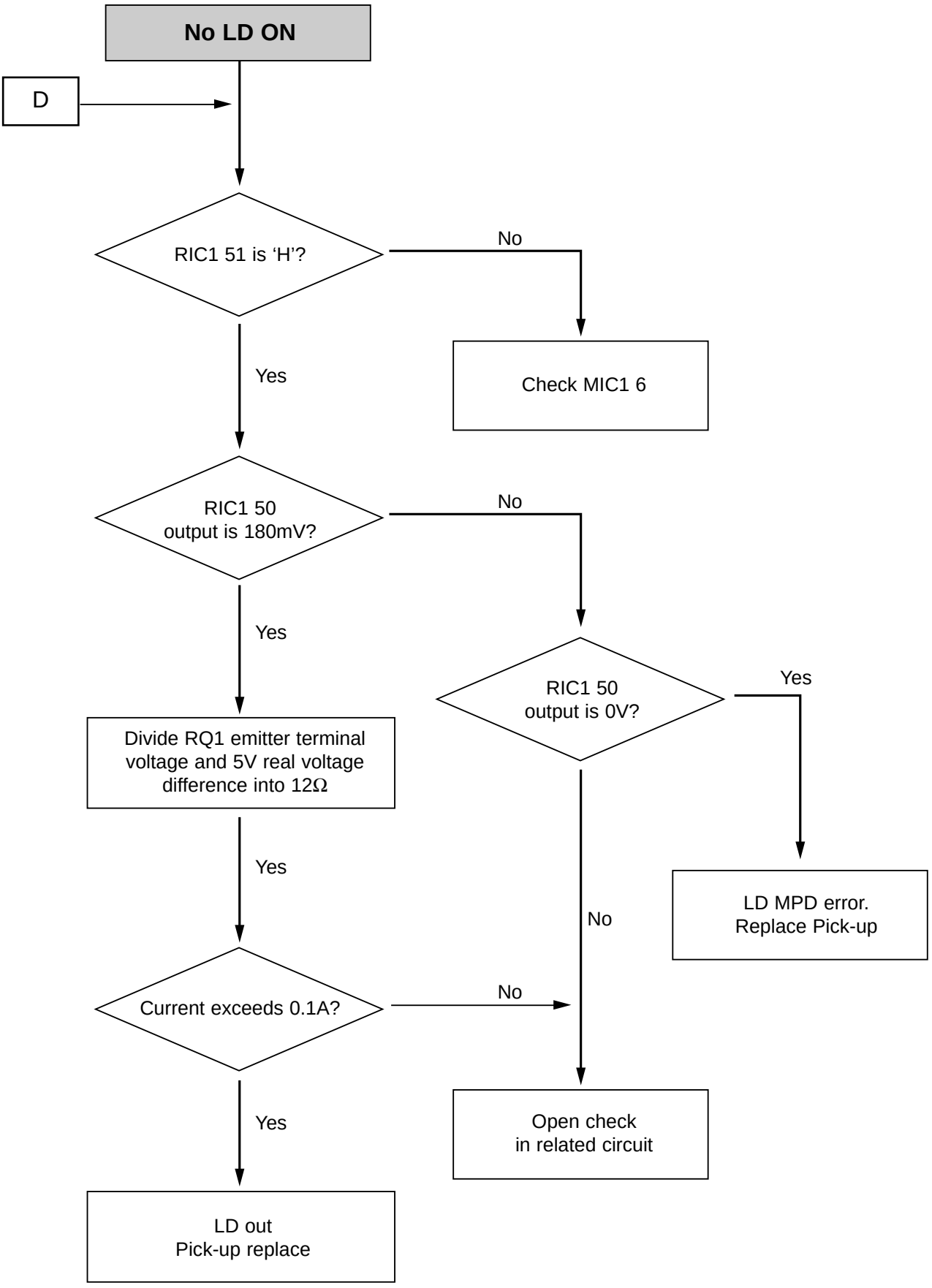

Abnormal rotation of disc motor
Yes
Input of RF signal is normal? For CD, SIC7 38 terminal. For DVD, DIC1 Pin 50
No
RIC3 Pin 6 output is normal?
No
Check RIC3 peripheral circuit and A, B, C, D
Yes
DMO output is normal? For CD, SIC7 55 terminal. For DVD. DIC1 Pin 54
No
After resoldering SIC7, DIC1, unchanged, replace IC.
RIC1 Pin 42 (for CD) or 43(for DVD) output are normal?
No
Check RIC1 soldering and power
Check path to SIC7 and DIC1
Yes
SIC6 Pin 1 output is normal?
No
Check SIC6 soldering and power
Yes
SIC5 Pin22 signal is normal?
No
Check SIC5 soldering and power or Replace SIC5
Yes
Check or replace disc motor

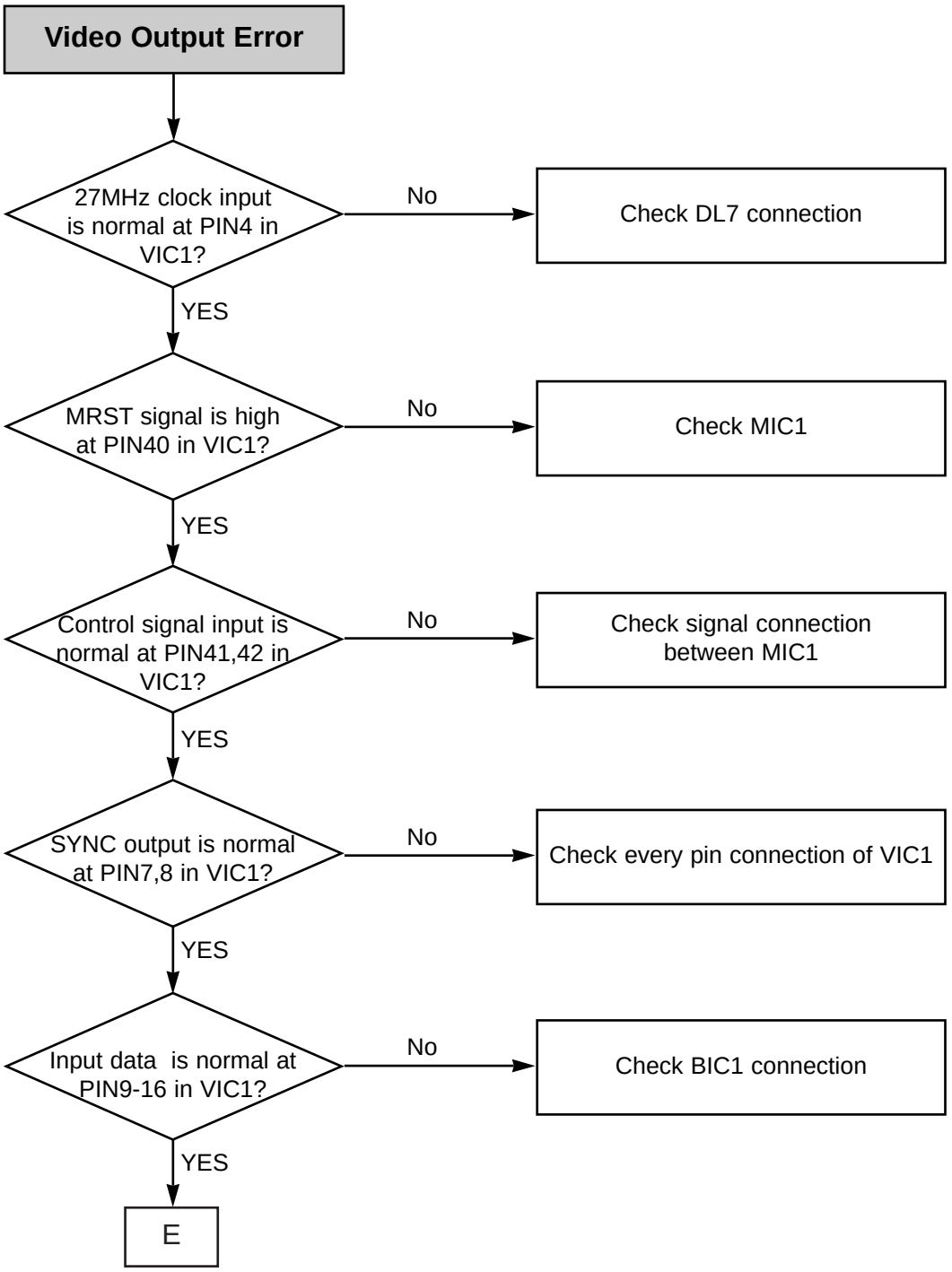

No tray open/close
MIC1 Pin84, 85 is
OPEN:L.L?
CLOSE:H.H
No
Micom error
Yes
Check SIC4 Pin26, 27
ouput at open/close
Yes
Signal is
reverse output
(based on SR24,25)?
No
Check SR24, 25
peripheral circuit
Yes
Check signal line state
from SIC4 Pin26, 27
to tray motor

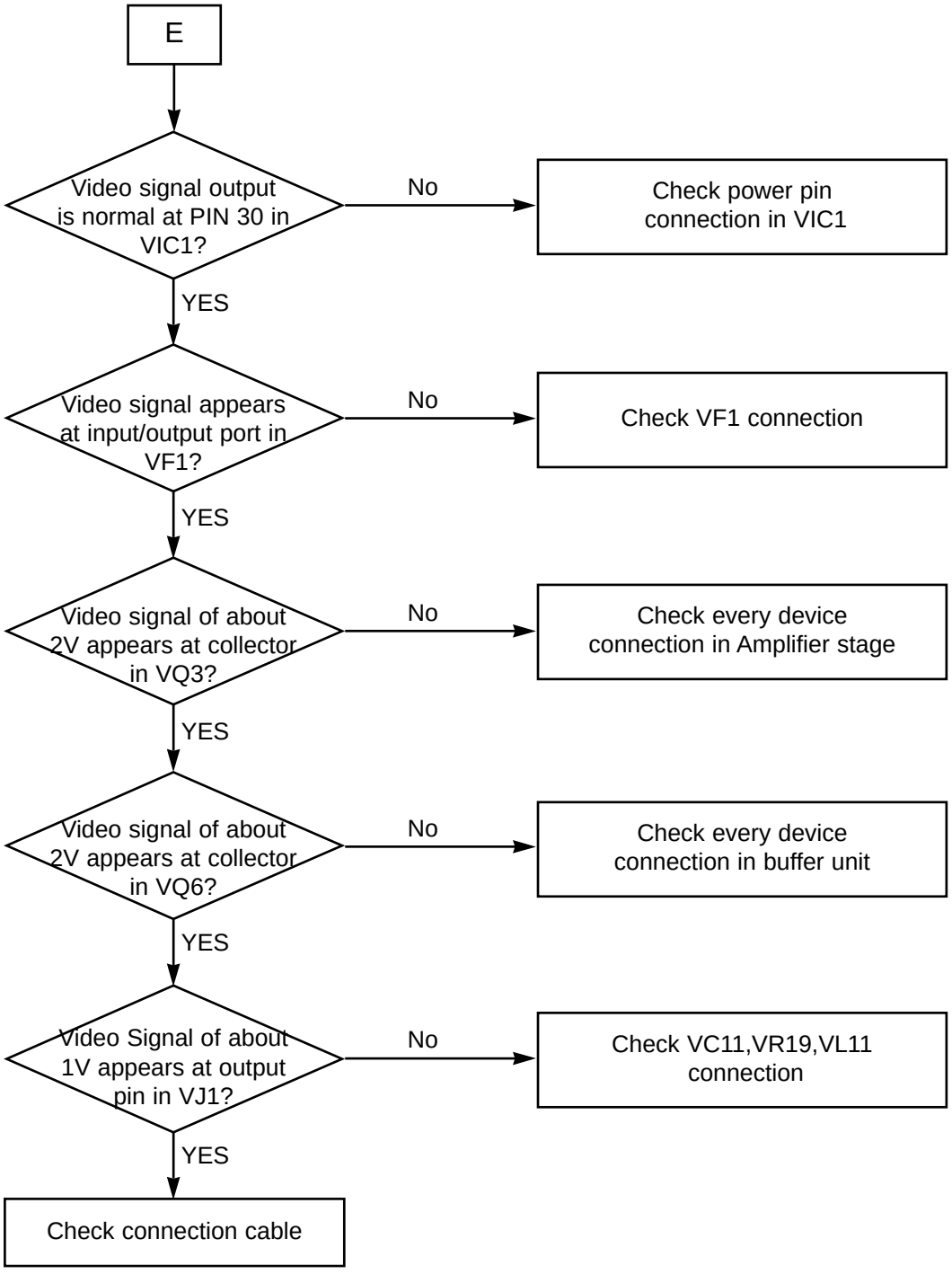

No disc recognition
LD is outputted from object lens at play key input?
No
D
Yes
No disc focus incoming and no disc occurs
C

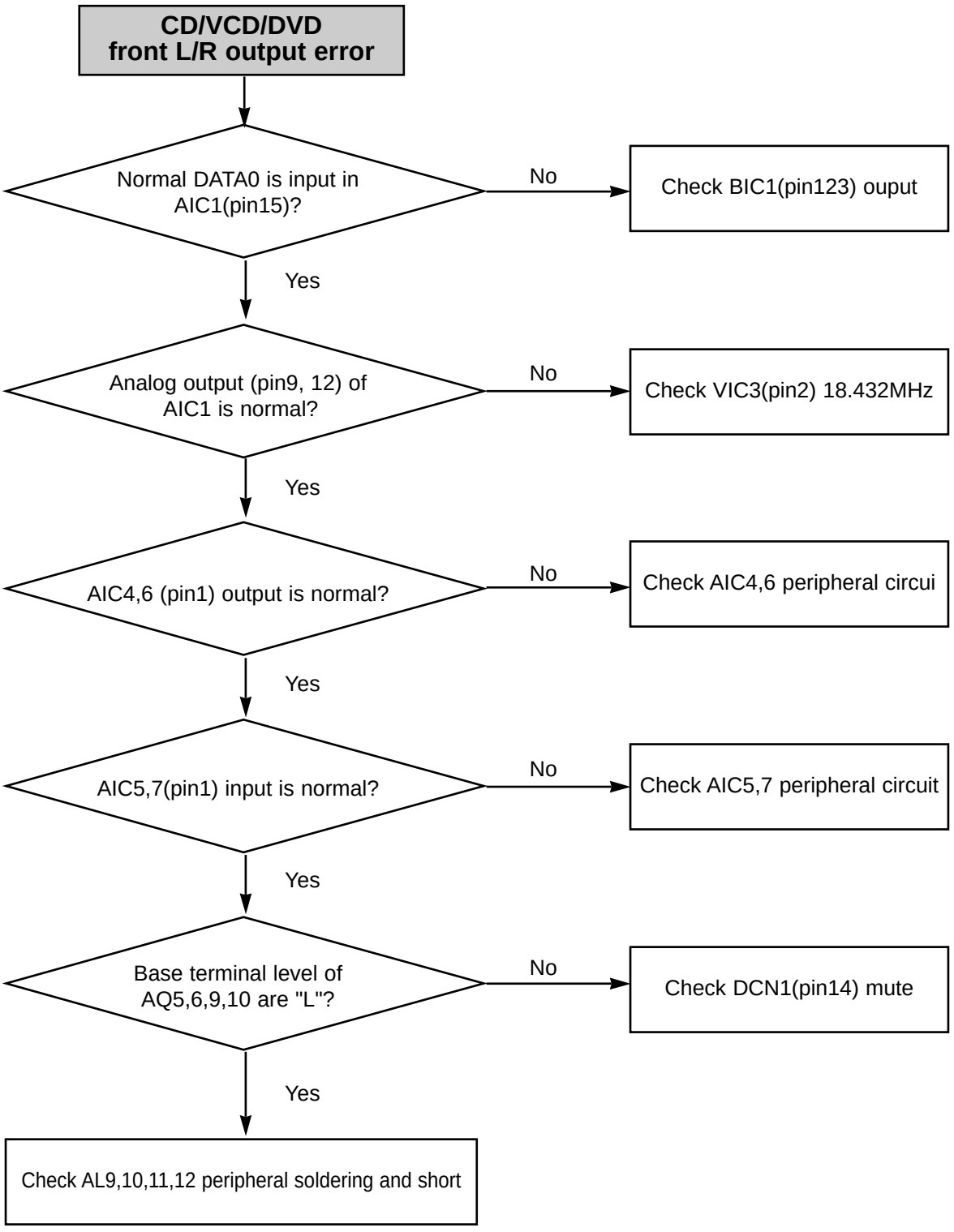

No focus incoming
C
FES in SIC7 43(TP39) is within specified range?
No
Check RR26, RR26A, RR28 value and A, B, C, D input
Yes
SIC4 1,2 outputs are normal?
No
Check SIC4
Yes
Check open state from SIC4 to Pick-up

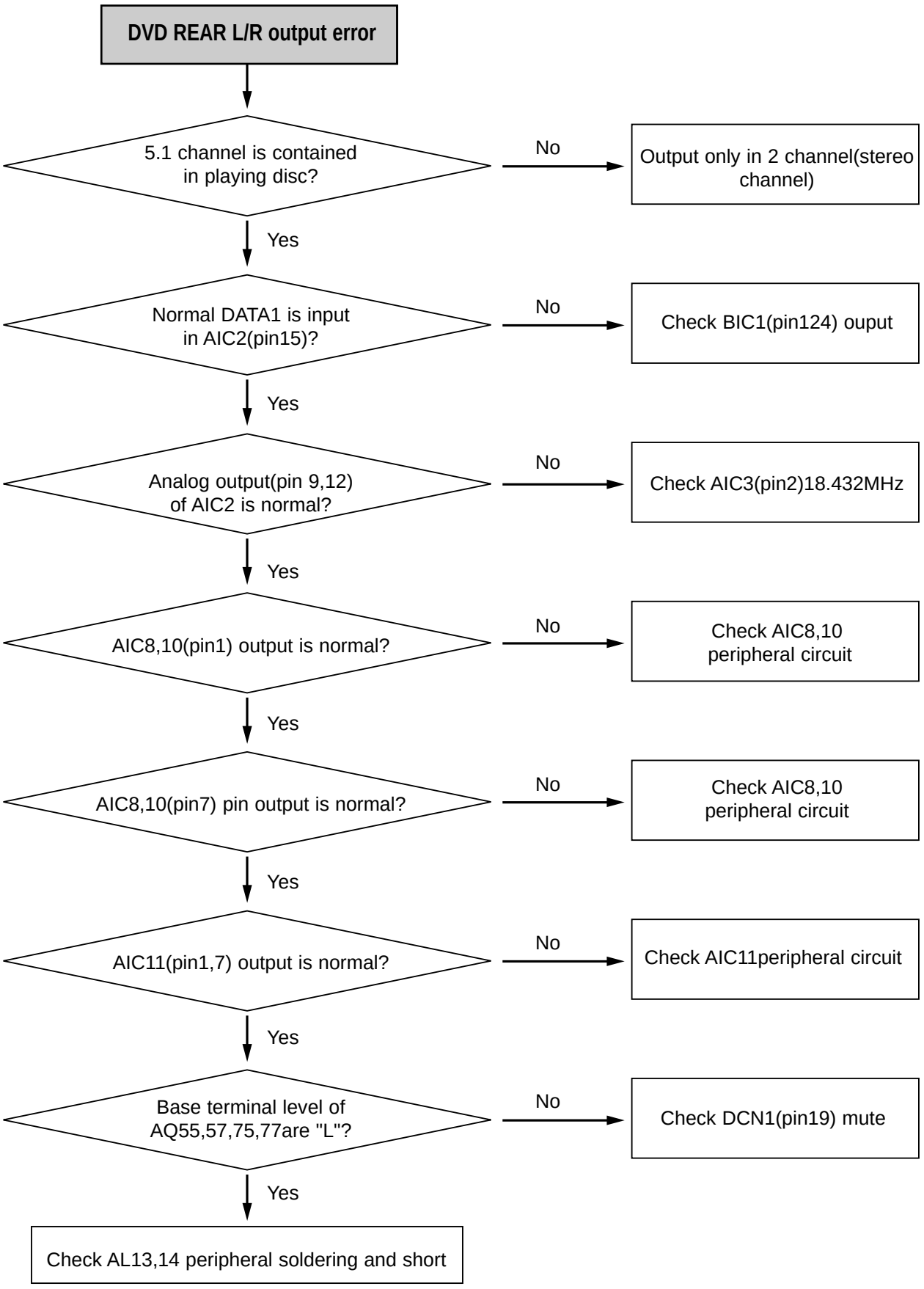

No PICK-UP
Home positioning
MIC1 8
Output is normal?
No
Micom error
Yes
SELED FG(MIC1 9) is
input normally
No
Check SIC2, SIC9
signal transfer system
Yes
Check SIC4
soldering and power

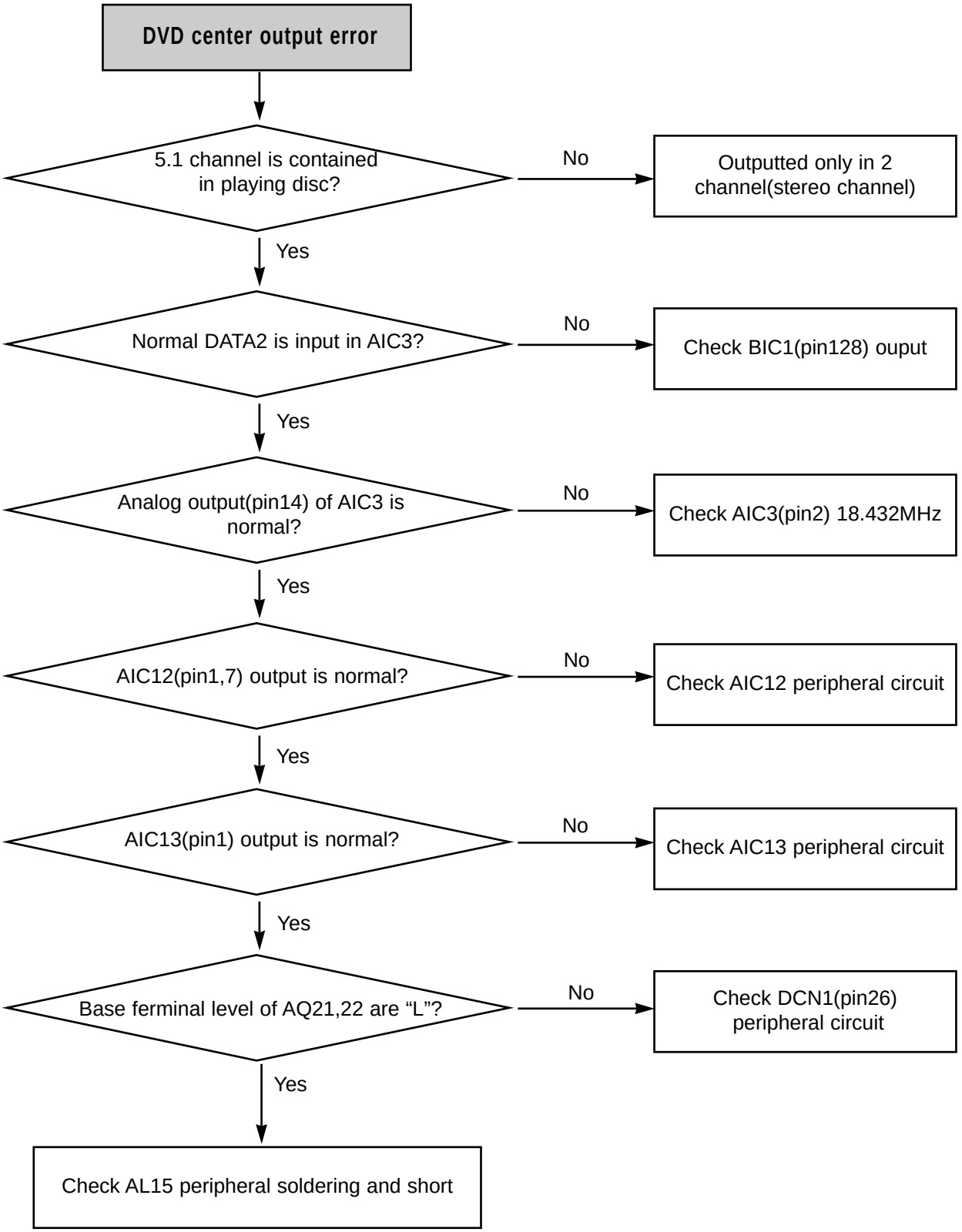

No LD ON
D
RIC1 51 is 'H'?
No
Check MIC1 6
Yes
RIC1 50
output is 180mV?
No
Yes
RIC1 50
output is 0V?
Yes
Divide RQ1 emitter terminal
voltage and 5V real voltage
difference into 12Ω
LD MPD error.
Replace Pick-up
Yes
No
Current exceeds 0.1A?
No
Open check
in related circuit
Yes
LD out
Pick-up replace

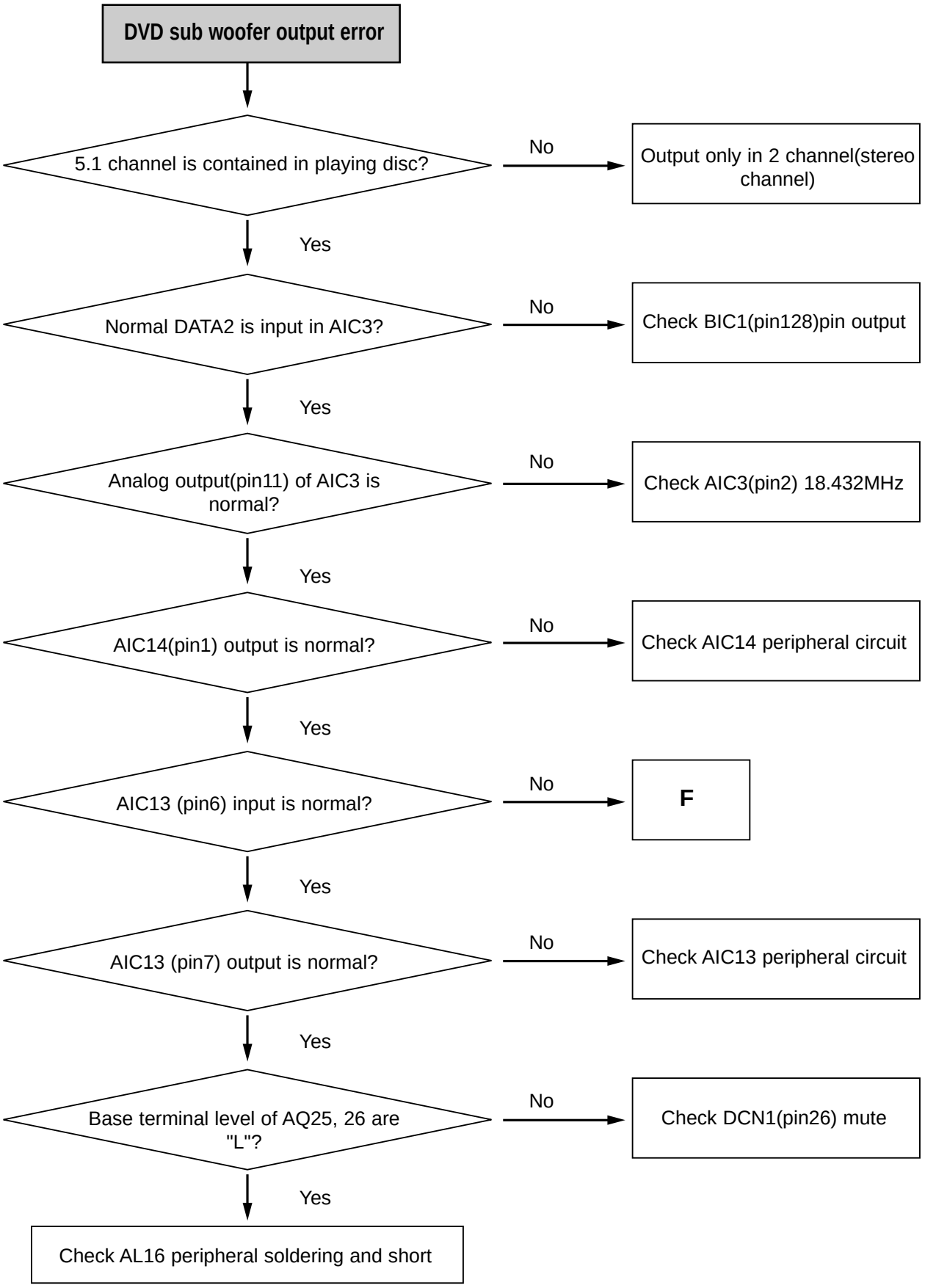

Video Output Error
27MHz clock input is normal at PIN4 in VIC1?
No
Check DL7 connection
YES
MRST signal is high at PIN40 in VIC1?
No
Check MIC1
YES
Control signal input is normal at PIN41,42 in VIC1?
No
Check signal connection between MIC1
YES
SYNC output is normal at PIN7,8 in VIC1?
No
Check every pin connection of VIC1
YES
Input data is normal at PIN9-16 in VIC1?
No
Check BIC1 connection
YES
E

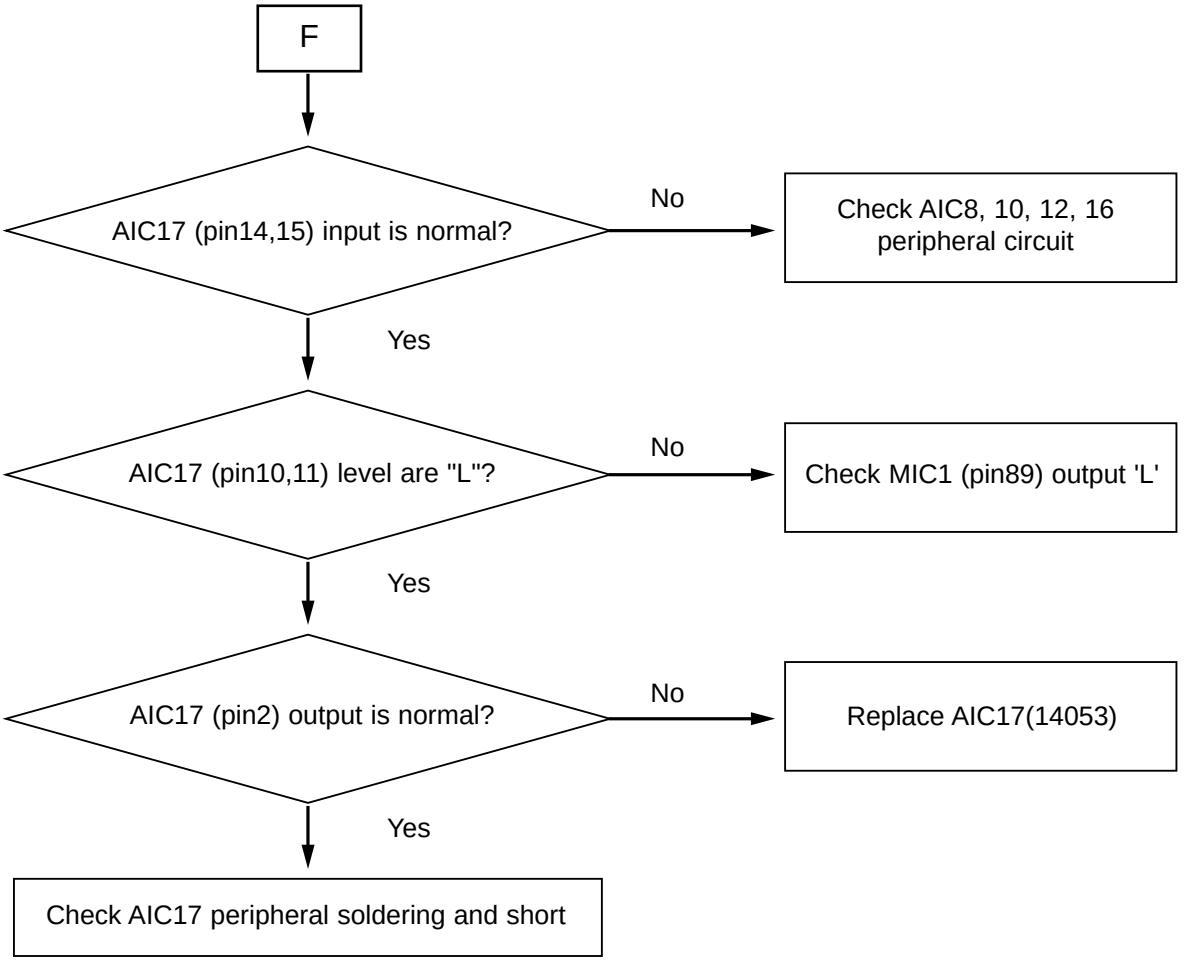

E
Video signal output is normal at PIN 30 in VIC1?
No
Check power pin connection in VIC1
YES
Video signal appears at input/output port in VF1?
No
Check VF1 connection
YES
Video signal of about 2V appears at collector in VQ3?
No
Check every device connection in Amplifier stage
YES
Video signal of about 2V appears at collector in VQ6?
No
Check every device connection in buffer unit
YES
Video Signal of about 1V appears at output pin in VJ1?
No
Check VC11,VR19,VL11 connection
YES
Check connection cable

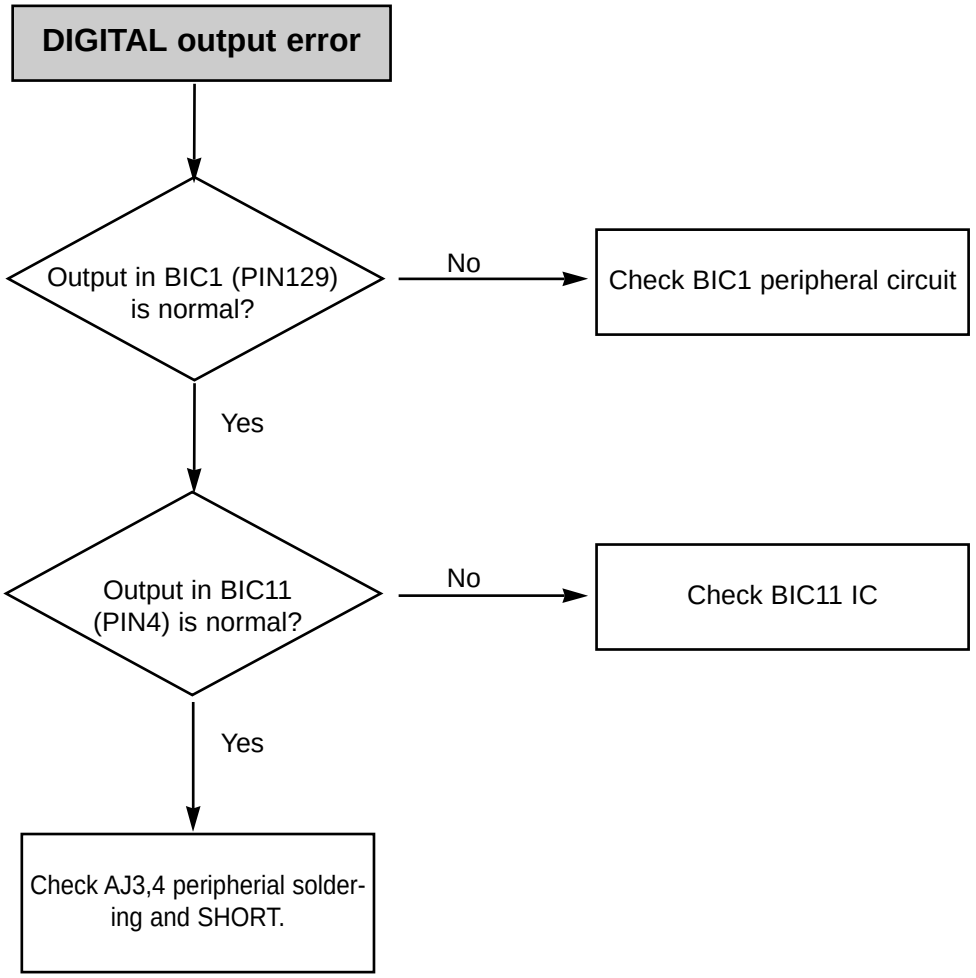

CD/VCD/DVD
front L/R output error
Normal DATA0 is input in AIC1(pin15)?
No
Check BIC1(pin123) ouput
Yes
Analog output (pin9, 12) of AIC1 is normal?
No
Check VIC3(pin2) 18.432MHz
Yes
AIC4,6 (pin1) output is normal?
No
Check AIC4,6 peripheral circui
Yes
AIC5,7(pin1) input is normal?
No
Check AIC5,7 peripheral circuit
Yes
Base terminal level of AQ5,6,9,10 are "L"?
No
Check DCN1(pin14) mute
Yes
Check AL9,10,11,12 peripheral soldering and short


DVD REAR L/R output error
5.1 channel is contained in playing disc?
No
Output only in 2 channel(stereo channel)
Yes
Normal DATA1 is input in AIC2(pin15)?
No
Check BIC1(pin124) ouput
Yes
Analog output(pin 9,12) of AIC2 is normal?
No
Check AIC3(pin2)18.432MHz
Yes
AIC8,10(pin1) output is normal?
No
Check AIC8,10 peripheral circuit
Yes
AIC8,10(pin7) pin output is normal?
No
Check AIC8,10 peripheral circuit
Yes
AIC11(pin1,7) output is normal?
No
Check AIC11peripheral circuit
Yes
Base terminal level of AQ55,57,75,77are "L"?
No
Check DCN1(pin19) mute
Yes
Check AL13,14 peripheral soldering and short

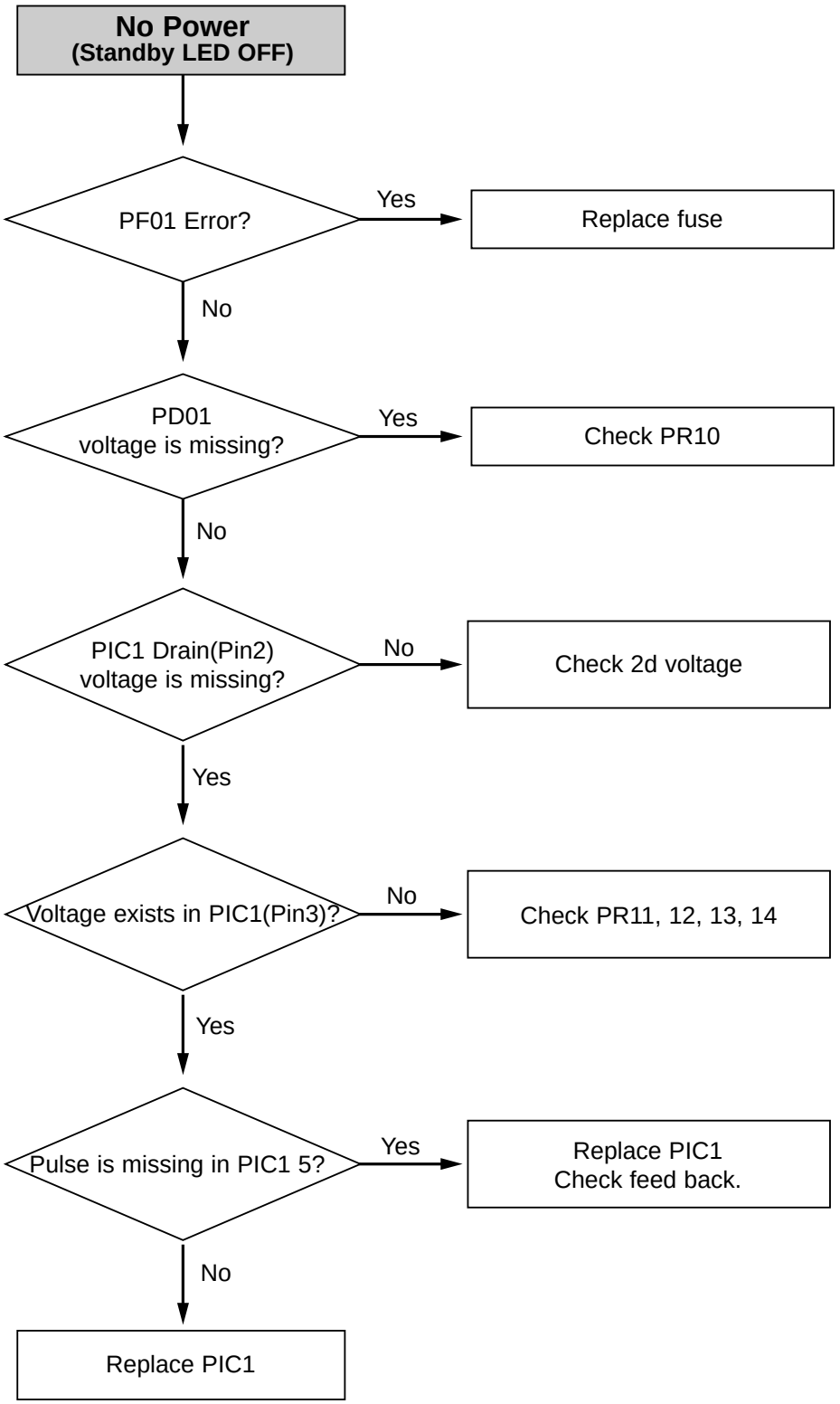

DVD center output error
5.1 channel is contained in playing disc?
No
Outputted only in 2 channel(stereo channel)
Yes
Normal DATA2 is input in AIC3?
No
Check BIC1(pin128) ouput
Yes
Analog output(pin14) of AIC3 is normal?
No
Check AIC3(pin2) 18.432MHz
Yes
AIC12(pin1,7) output is normal?
No
Check AIC12 peripheral circuit
Yes
AIC13(pin1) output is normal?
No
Check AIC13 peripheral circuit
Yes
Base ferminal level of AQ21,22 are “L”?
No
Check DCN1(pin26) peripheral circuit
Yes
Check AL15 peripheral soldering and short

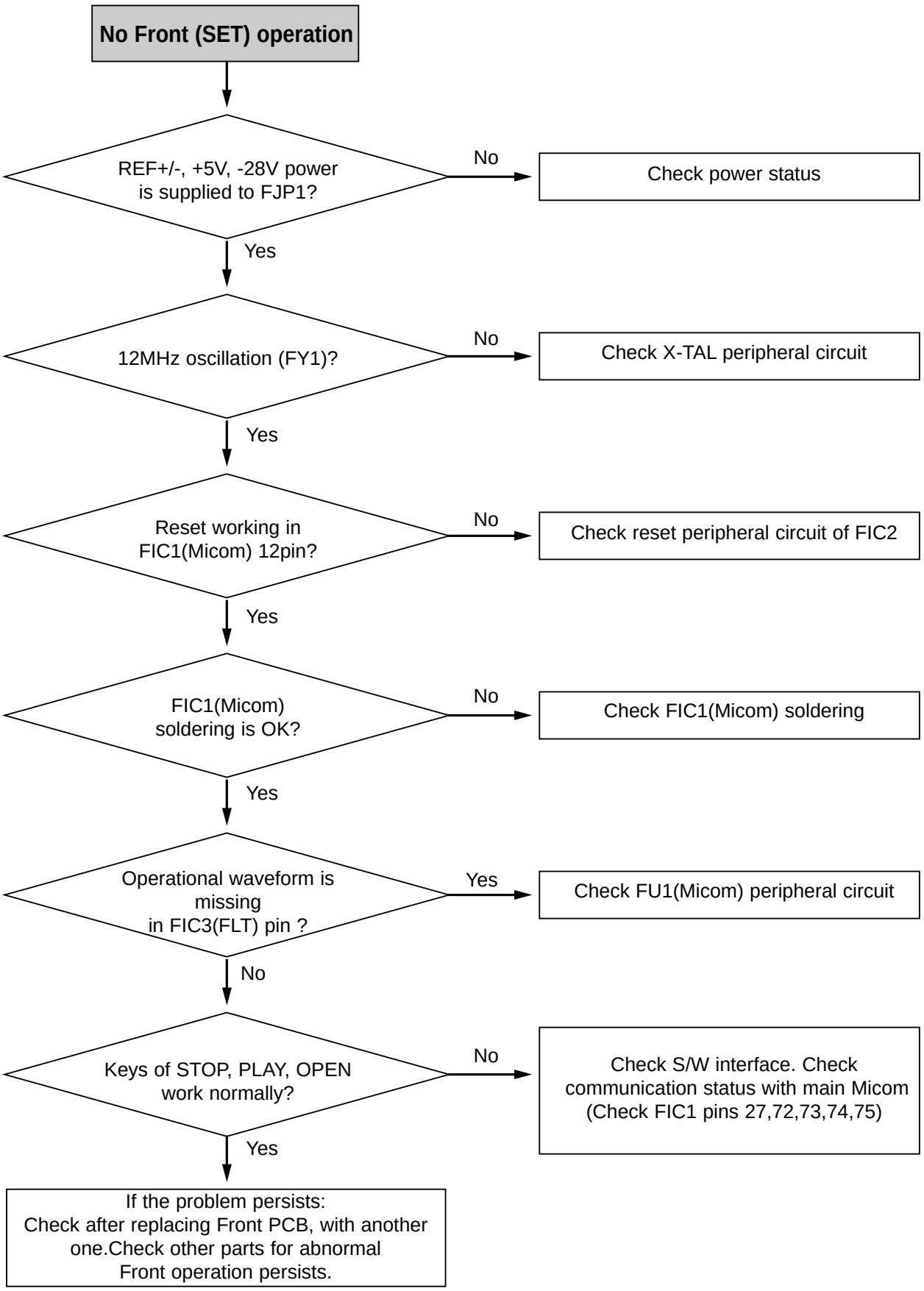

DVD sub woofer output error
5.1 channel is contained in playing disc?
No
Output only in 2 channel(stereo channel)
Yes
Normal DATA2 is input in AIC3?
No
Check BIC1(pin128)pin output
Yes
Analog output(pin11) of AIC3 is normal?
No
Check AIC3(pin2) 18.432MHz
Yes
AIC14(pin1) output is normal?
No
Check AIC14 peripheral circuit
Yes
AIC13 (pin6) input is normal?
No
F
Yes
AIC13 (pin7) output is normal?
No
Check AIC13 peripheral circuit
Yes
Base terminal level of AQ25, 26 are "L"?
No
Check DCN1(pin26) mute
Yes
Check AL16 peripheral soldering and short

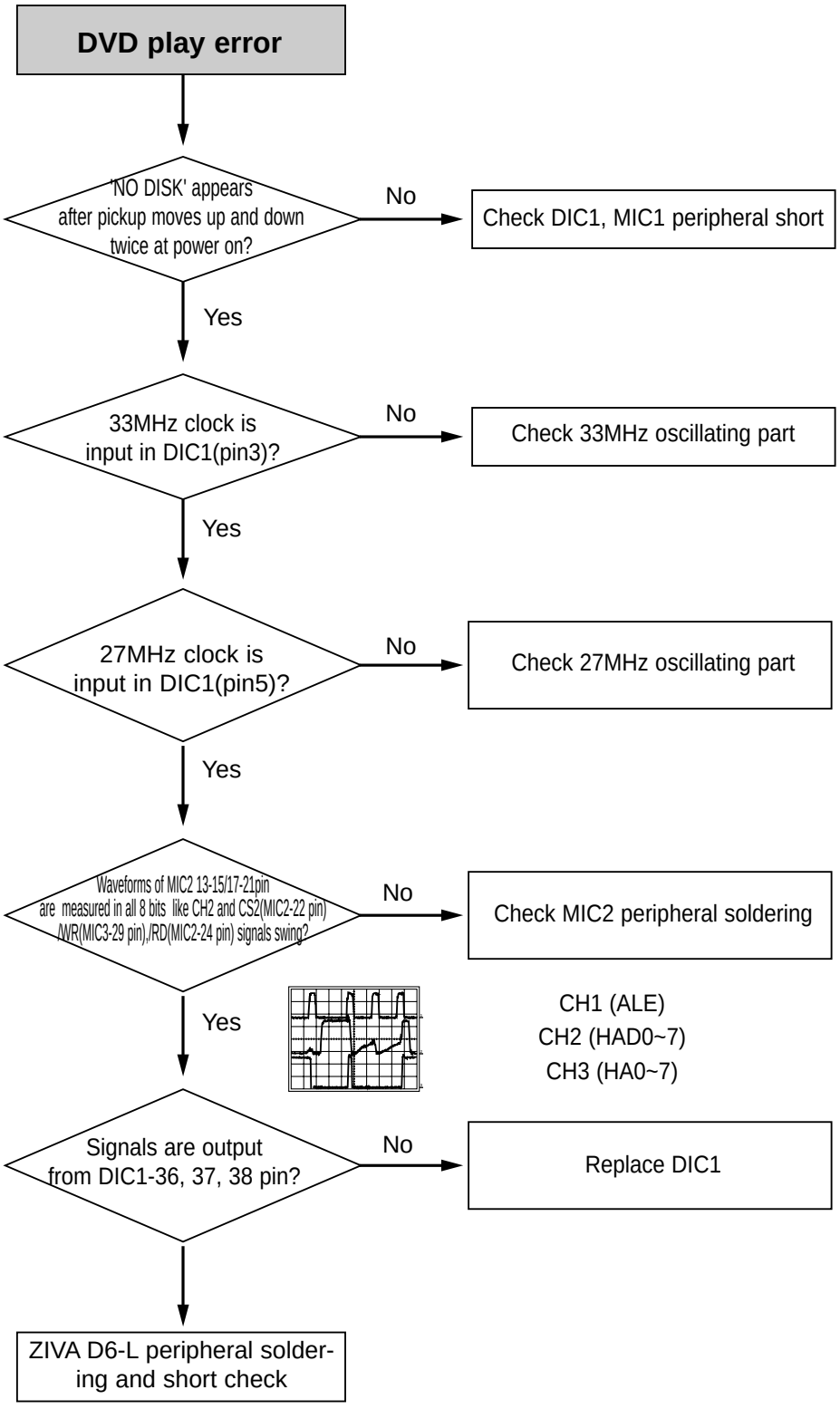

F
AIC17 (pin14,15) input is normal?
No
Check AIC8, 10, 12, 16 peripheral circuit
Yes
AIC17 (pin10,11) level are "L"?
No
Check MIC1 (pin89) output 'L'
Yes
AIC17 (pin2) output is normal?
No
Replace AIC17(14053)
Yes
Check AIC17 peripheral soldering and short

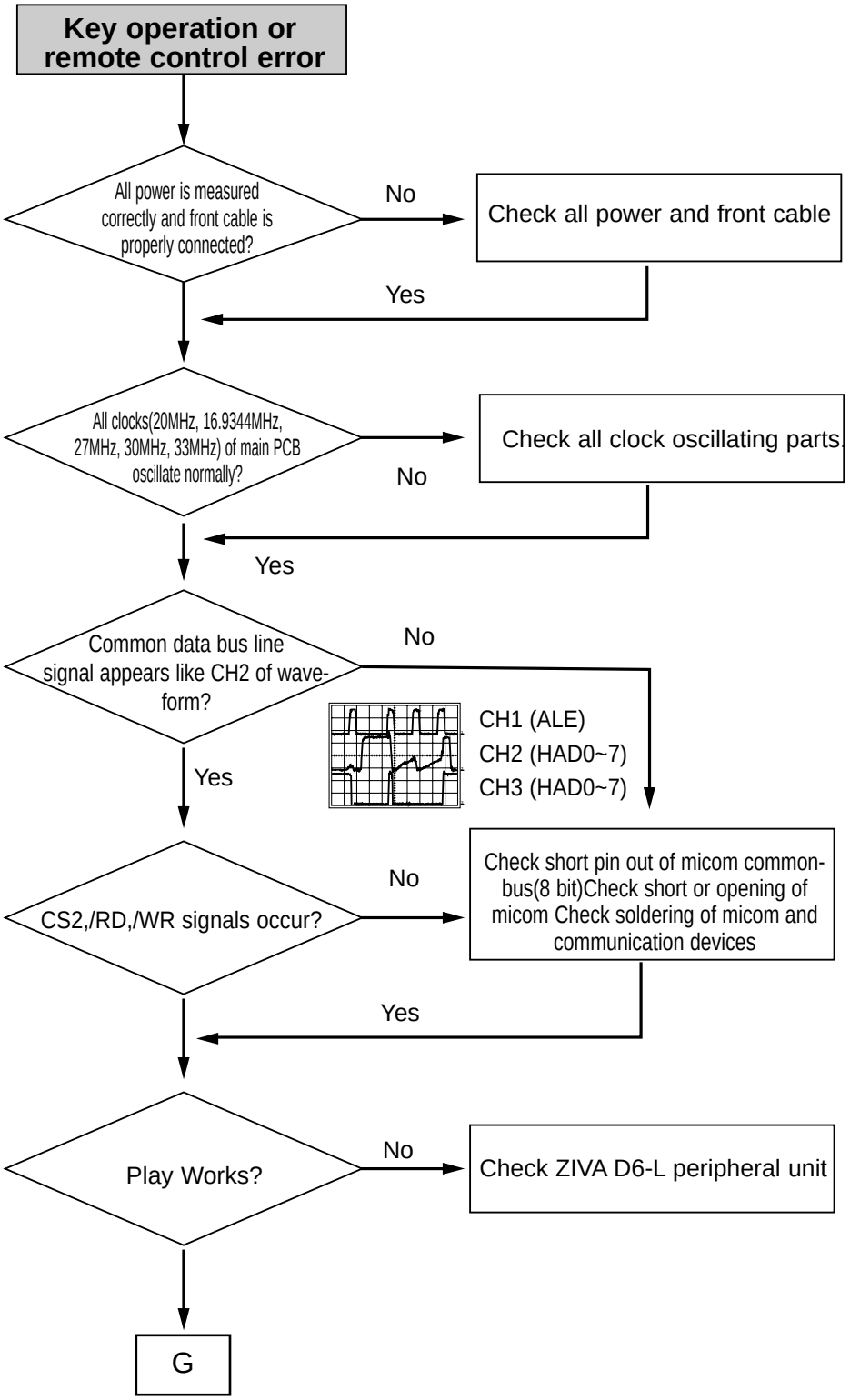

DIGITAL output error
Output in BIC1 (PIN129) is normal?
No
Check BIC1 peripheral circuit
Yes
Output in BIC11 (PIN4) is normal?
No
Check BIC11 IC
Yes
Check AJ3,4 peripherial solder-ing and SHORT.

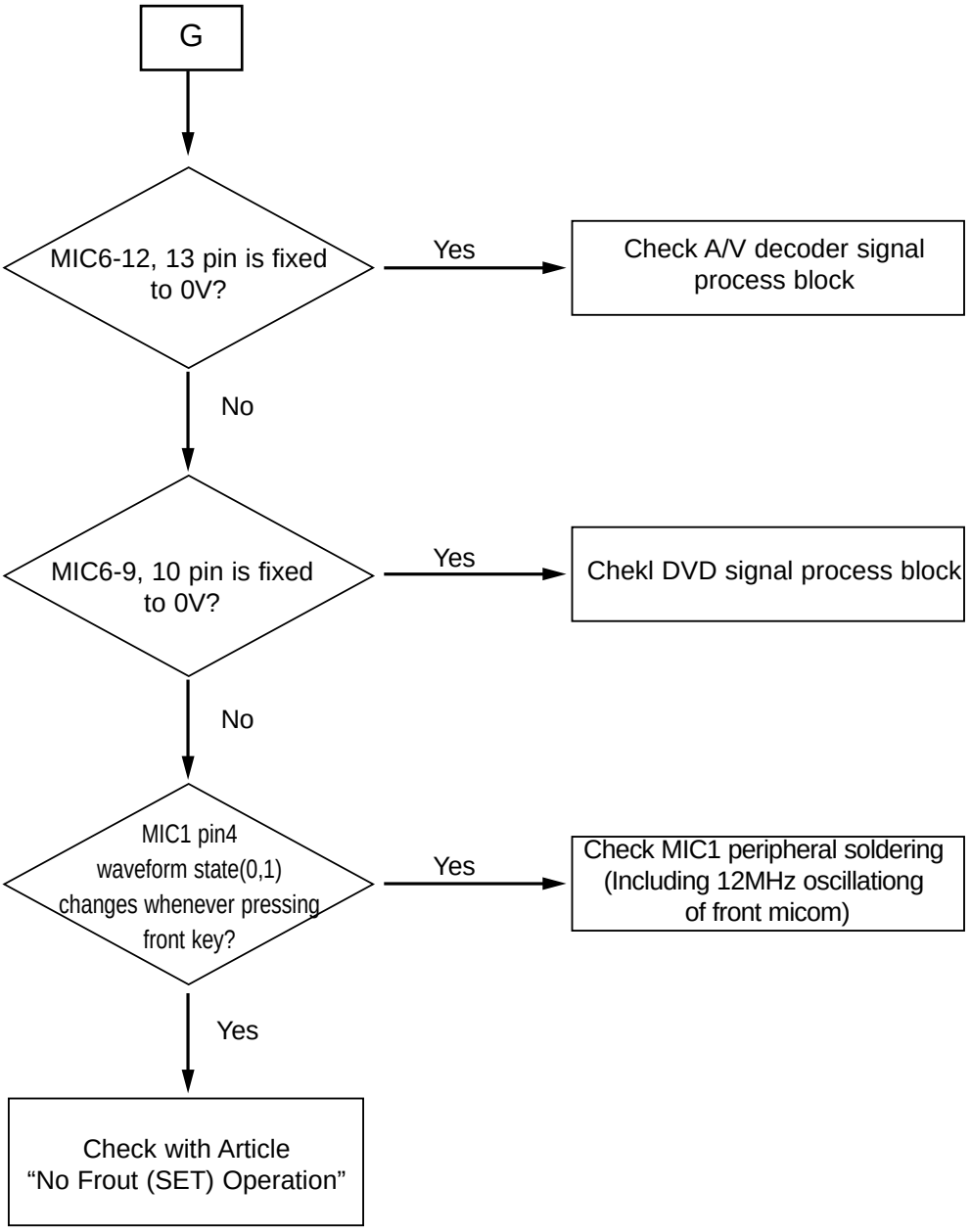
8-4. Thoubleshooting Etc




No Front (SET) operation
REF+/-, +5V, -28V power is supplied to FJP1?
No
Check power status
Yes
12MHz oscillation (FY1)?
No
Check X-TAL peripheral circuit
Yes
Reset working in FIC1(Micom) 12pin?
No
Check reset peripheral circuit of FIC2
Yes
FIC1(Micom) soldering is OK?
No
Check FIC1(Micom) soldering
Yes
Operational waveform is missing in FIC3(FLT) pin ?
Yes
Check FU1(Micom) peripheral circuit
No
Keys of STOP, PLAY, OPEN work normally?
No
Check S/W interface. Check communication status with main Micom (Check FIC1 pins 27,72,73,74,75)
Yes
If the problem persists:
Check after replacing Front PCB, with another one.Check other parts for abnormal
Front operation persists.


DVD play error
'NO DISK' appears after pickup moves up and down twice at power on?
No
Check DIC1, MIC1 peripheral short
Yes
33MHz clock is input in DIC1(pin3)?
No
Check 33MHz oscillating part
Yes
27MHz clock is input in DIC1(pin5)?
No
Check 27MHz oscillating part
Yes
Waveforms of MIC2 13-15/17-21pin are measured in all 8 bits like CH2 and CS2(MIC2-22 pin) /WR(MIC3-29 pin),/RD(MIC2-24 pin) signals swing?
No
Check MIC2 peripheral soldering
Yes
CH1 (ALE)
CH2 (HAD0~7)
CH3 (HA0~7)
Signals are output from DIC1-36, 37, 38 pin?
No
Replace DIC1
ZIVA D6-L peripheral solder-ing and short check


Key operation or remote control error
All power is measured correctly and front cable is properly connected?
No
Check all power and front cable
Yes
All clocks(20MHz, 16.9344MHz, 27MHz, 30MHz, 33MHz) of main PCB oscillate normally?
Check all clock oscillating parts.
No
Yes
Common data bus line signal appears like CH2 of wave-form?
No
CH1 (ALE)
CH2 (HAD0~7)
CH3 (HAD0~7)
Yes
CS2,/RD,/WR signals occur?
No
Check short pin out of micom common-bus(8 bit)Check short or opening of micom Check soldering of micom and communication devices
Yes
Play Works?
No
Check ZIVA D6-L peripheral unit
G


G
MIC6-12, 13 pin is fixed to 0V?
Yes
Check A/V decoder signal process block
No
MIC6-9, 10 pin is fixed to 0V?
Yes
Chekl DVD signal process block
No
MIC1 pin4 waveform state(0,1) changes whenever pressing front key?
Yes
Check MIC1 peripheral soldering (Including 12MHz oscillationg of front micom)
Yes
Check with Article "No Frout (SET) Operation"

9. Exploded Views and Parts List

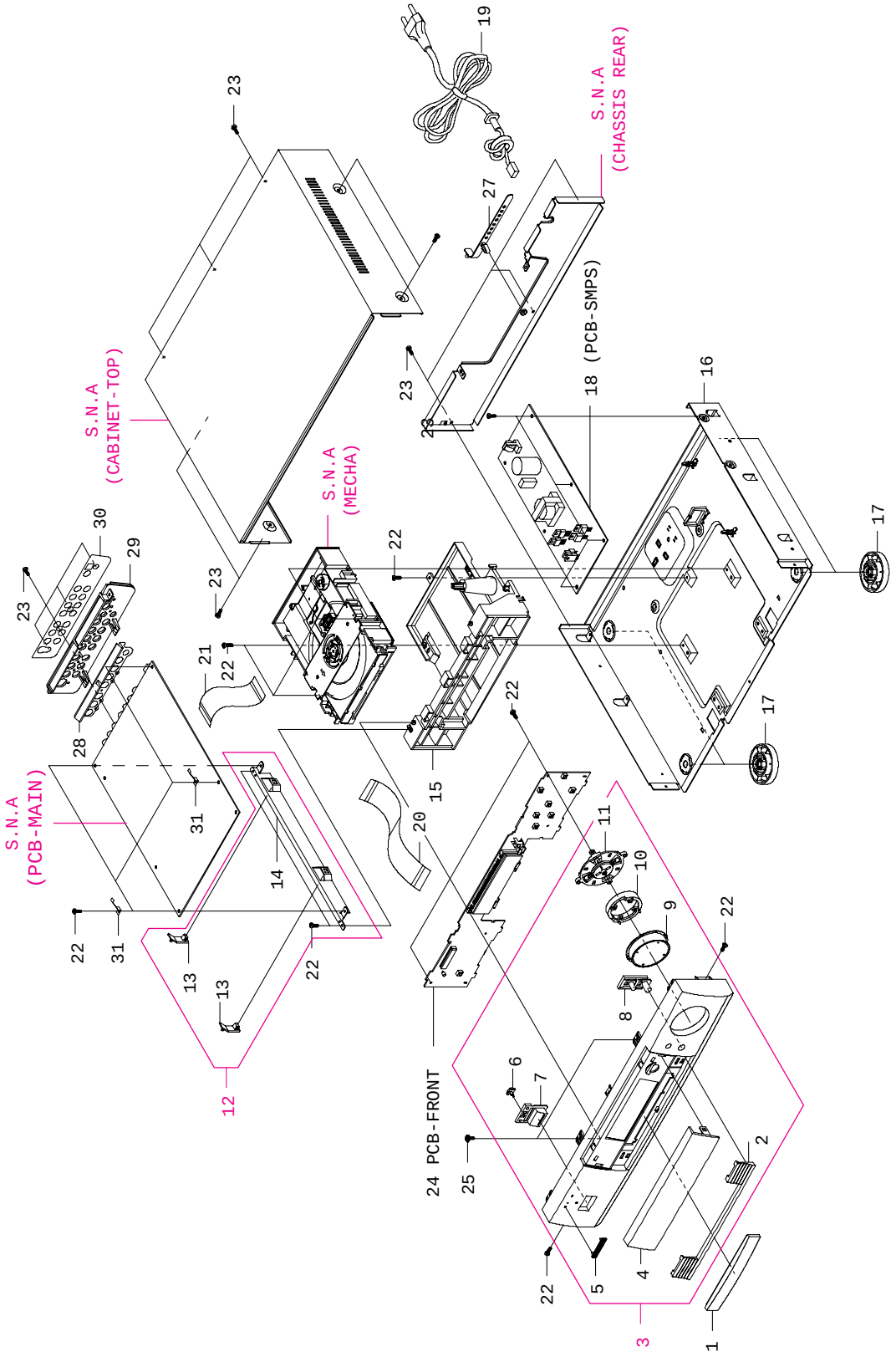
9-1 Exploded View DVD-907

9-2 Exploded View DVD-927

9-3 Deck Exploded View

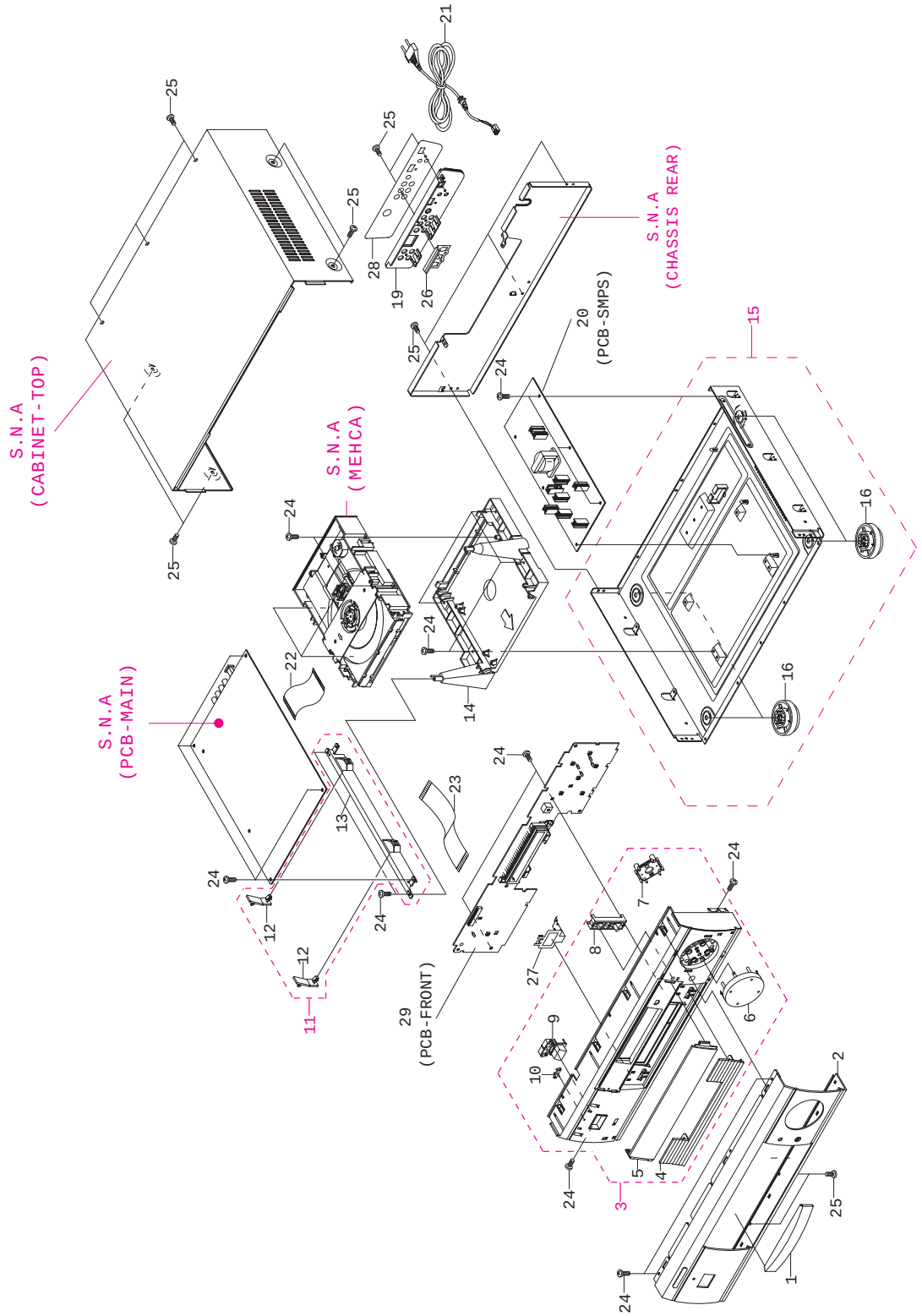
9-4 Remote Control

9-1 Exploded View (DVD-907)



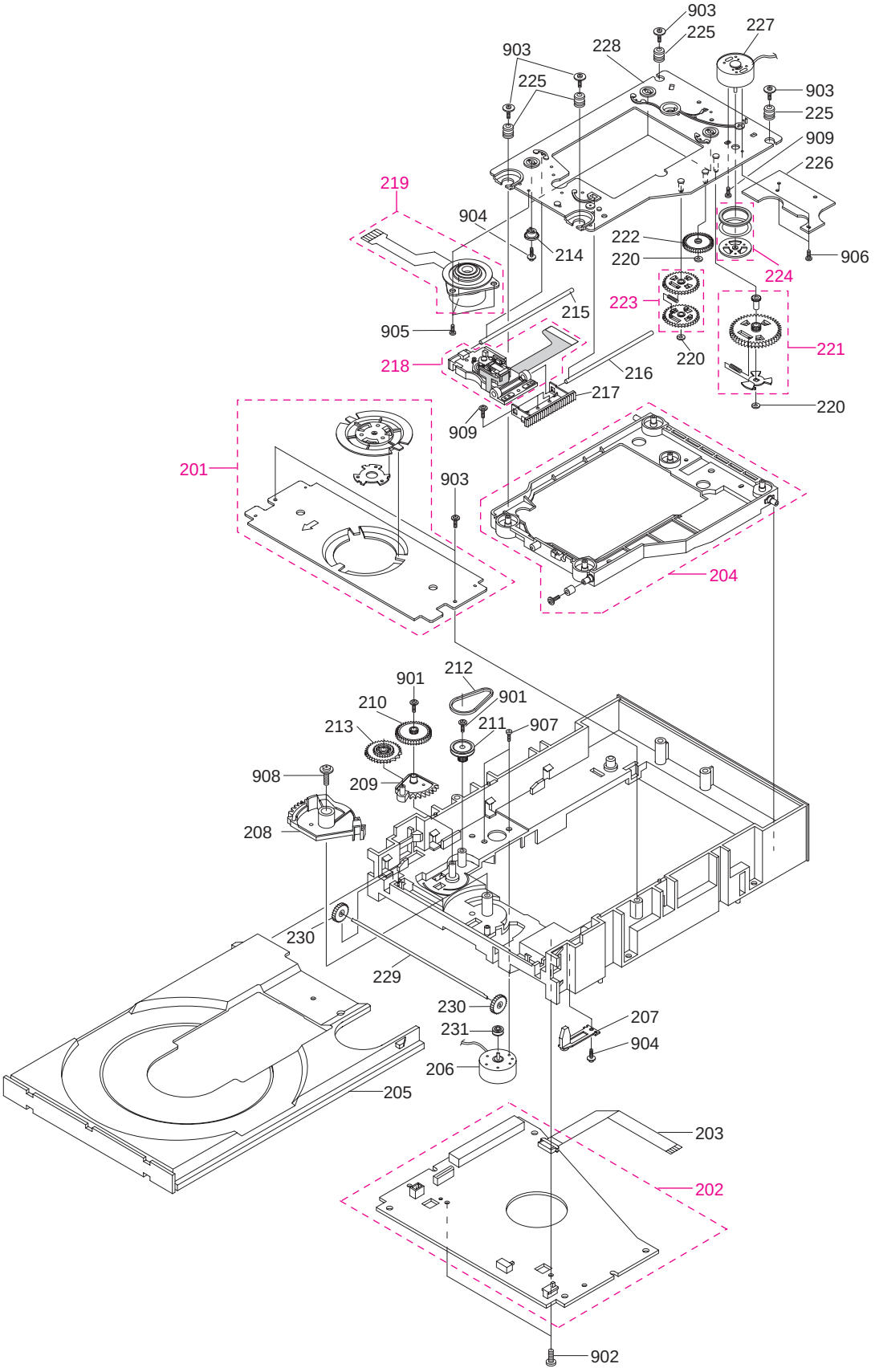
Loc. No	New Part No	Description and Specification	Remark
1	AH95-50320B	ASSY-DOOR,TRAY;DVD-907,ABS+PBS T0.2,DVD	
2	AH63-30235B	COVER-CENTER;-,ABS94,HB,-,BLK,-,-,DVD907	
3	AH95-10328B	ASSY-CABINET FRONT;DVD-907,ASSY,EXPORT,S	
4	AH64-40420B	WINDOW-FLT;-,PMMA,-,T2.5,VIOLET,-,DVD907	
5	AH64-70003D	BADGE-BRAND;AL,-,L35,-,-,	
6	AH64-40419A	INDICATOR-POWER;-,PMMA,HB,T2.5,MILK,-,DV	
7	AH64-11167B	KNOB-POWER;-,ABS94,HB,BLK,H/S,DVD-907	
8	AH64-11168A	KNOB-OPEN;-,ABS94,HB,SIL,-,DVD-670	
9	AH64-11183B	KNOB-PLAY;-,ABS94,HB,BLK,-,DVD-907	
10	AH64-40422A	INDICATOR-PLAY;-ABS,HB,-SIL,-,DVD-670	
11	AH61-20474A	HOLDER-PLAY;-,ABS94,HB,BLK,-,DVD-670	
12	AH95-50238A	ASSY-BRKT PCB;DVD-860K,SECC+NYLON,-	
13	AH61-20279A	HOLDER-PWB;NYLON66,-,-,-,VIP680T	
14	AH61-10692A	BRACKET-PCB;-,SECC,-,T1.0,NTR,-,DVD-860K	
15	AH61-10721B	FRAME-CHASSIS;-,ABS94,HB,-,L180,W240,H70	
16	AH95-10329B	ASSY-CABINET BOTTOM;DVD-907,ASSY,EXPORT	
17	AH95-50252A	ASSY-FOOT;DVD-860,ABS+EVA SPONGE,-	
18	AH90-10746U	ASSY-PCB POWER;DVD-907,XXA	
19	AH39-10060M	POWER-CORD;KKP-10W,SPT-2,AWG2/18,1.83MT,	
22	6003-000276	SCREW-TAPTITE;BH,+,B,M3,L10,ZPC(YEL),SWC	
23	6003-000275	SCREW-TAPTITE;BH,+,B,M3,L10,BLK,SWCH101	
24	6003-000277	SCREW-TAPTITE;BH,+,B,M3,L12,ZPC(YEL),SWR	
25	6003-000256	SCREW-TAPTITE;BHW,+,B,M3,L10,ZPC(YEL),SM	
26	AH90-10746V	ASSY- PCB FRONT;DVD-907,XXA	
27	AH65-20001A	CABLE-CLAMP;-,PE,-,BLK,-,DV532KV	
28	AH63-40163A	GROUND-REAR;-,PBS,TO.2,-,DVD-860	
29	AH63-30228A	COVER-REAR;-,ABS94,HB,T2,BLK,-,-,DVD-860	
30	AH64-60055D	INLAY-REAR;-,PVC SHEET,T0.5,L186.8 W36.2,	
31	AH61-10692A	BRACKET-PCB;-,SECC,-,T1.0,NTR,-,DVD-860K	

9-2 Exploded View(DVD-927)



Loc. No	New Part No	Description and Specification	Remark
1	AH95-50295A	ASSY-DOOR;DVD-905,ABS+PBS T0.2,DVD BADGE	
2	AH95-50239C	ASSY-COVER PANEL;DVD-905,AL+BADGE,SILVER BADGE	
3	AH95-10321A	ASSY-CABINET FRONT;DVD-860,ABS,-	
4	AH63-30220A	COVER-CENTER;-,AL,-,T2.0,TITAN,HAIRLINE,-,D	
5	AH64-40401A	WINDOW-FLT;-,PMMA,V0,T2.5,VIOLET,-,DVD-86	
6	AH95-50251A	ASSY-KNOB PLAY;DVD-860,ABS,-	
7	AH61-20438A	HOLDER-PLAY;-,ABS,HB,WHT,-,DVD-860	
8	AH64-11144A	KNOB-OPEN;-,ABS94,HB,BLK,-,DVD-860	
9	AH64-11143A	KNOB-POWER;-,ABS94,HB,BLK,-,DVD-860	
10	AH64-40402A	INDICATOR-POWER;-,PMMA,HB,T2.5,MILK,-,DVD-860	
11	AH95-50238A	ASSY-BRKT PCB;DVD-860K,SECC+NYLON,-	
12	AH61-20279A	HOLDER-PWB;NYLON66,-,-,-,VIP680T,	
13	AH61-10692A	BRACKET-PCB;-,SECC,-,T1.0,NTR,-,DVD-860K	
14	AH61-10694A	FRAME-CHASSIS;-,ABS94,HB,T3,L200,W180,H100,B	
15	AH95-10322A	ASSY-CABINET BOTTOM;DVD-860K,SECC+ABS,-	
16	AH95-50252A	ASSY-FOOT;DVD-860,ABS+EVA SPONGE,-	
19	AH63-30228A	COVER-REAR;-,ABS94,HB,T2,BLK,-,-,DVD-860	
20	AH90-10682A	ASSY-PCB SMPS;DVD860,DOM	
21	AH39-10002G	POWER CORD;CP,VCTFK-0.75X2,1.8M,5239,KS	
22	3809-001030	CABLE-FLAT;30V,80C,110MM,8P,1MM,UL2	
23	3809-001025	CABLE-FLAT;30V,80C,270MM,28P,1.25MM,UL289	
24	6003-000276	SCREW-TAPTITE;BH,+,B,M3,L10,ZPC(YEL),SWCH1018AK	
25	6003-000275	SCREW-TAPTITE;BH,+,B,M3,L10,BLK ,SWCH1018AK	
26	AH63-40163A	GROUND-REAR;-,PBS,T0.2,-DVD-860	
27	AH63-40161A	GROUND-FRONT;-,PBS,T0.2,-,DVD-860	
28	AH64-60055A	INLAY-REAR;-,PVC SHHET,T0.3,L186.8 W36.2,	
29	AH90-10727U	ASSY- PCB FRONT;DVD858V,CHN	

9-3 Deck Exploded View

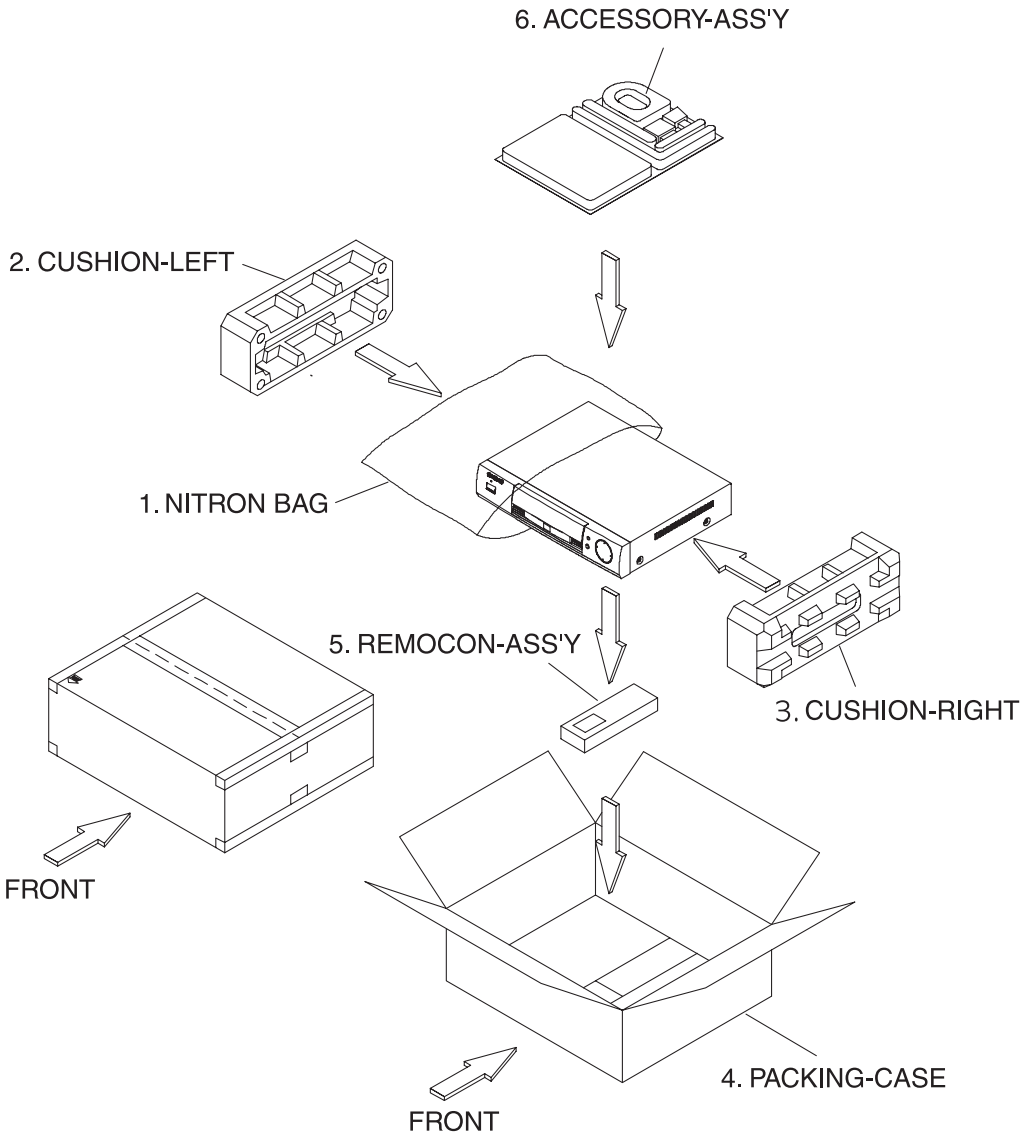


Loc. No	New Part No	Description and Specification	Remark
201	AH91-60117A	ASSY-DECK CLAMPER;DVD860,-,DP-1	
202	AH90-10685B	ASSY-PCB DECK;DVD860,DOM	
203	3809-001030	CABLE-FLAT;30V,80C,110MM,1MM,8P,UL2	
204	AH91-60126A	ASSY-CHASSIS SUB;DP-1,DVD860,-	
205	AH66-90054A	TRAY-DVD;DP,ABS,-,BLK,-,DP-1	
206	AH31-10028A	MOTOR-FEED;DP,RF-300C-11440,D/V5.9,60HZ	
207	AH66-30087A	LEVER-OPEN SW;DP,KEPITAL,T0.7,L26,F20-03 BLK	
208	AH66-20194A	GEAR-CAM CENTER;DP,KEPITAL F20-03,M1.2,Z7,BLK,	
209	AH66-20183A	GEAR-CAM SUB;DP,KEPITAL FT2020,M1,2,Z7,-,PC	
210	AH66-20185A	GEAR-TRAY A;DP,KEPITAL F20-03,M0.4/M0.5,Z5	
211	AH66-10024A	PULLEY-GEAR;DP,KEPITAL F20-03,BLK,DP-1	
212	AH66-60033A	BELT-PULLEY;DP,NBR,T1.5,0.08,L82.7,BLK,DP-	
213	AH66-20184A	GEAR-TRAY;DP,KEPITAL F20-03,M0.5/M0.6,Z4	
214	AH61-20424A	HOLDER-CAM;DP,KEPITAL,-,BLK,F20-03,DP-1	
215	AH61-50284A	SHAFT-P.U(L);DP,SUS420J2,OD3,L79,	
216	AH61-50278A	SHAFT-P.U(R);DP,SUS420J2,OD3,L87,-,NTR,DP-1	
217	AH66-20178A	RACK-SLIDE;DP,KEPITAL F20-03,WHT,M0.4,P1.	
218	AJ30-20035F	PICK-UP;SOH-D1A	
219	AH91-60134A	ASSY-MOTOR SPINDLE;DP-2,SDR-130	
220	AH60-30020A	WASHER-PLAIN;DP,-,ID3.1,OD6,T0.3,RED COLOR,	
221	AH91-60120A	ASSY-GEAR-FEED-AU/AL;DP-1,DVD-860,-	
222	AH66-20182A	GEAR-FEED B;DP,KEPITAL F20-03,M0.4,Z44,WHT	
223	AH91-60121A	ASSY-GEAR-FEED-CU/CL;DP-1,DVD-860,-	
224	AH91-60122A	ASSY-GEAR-MAGNET;DP-1,DVD-860,-	
225	AH73-10017A	RUBBER-INSULATOR;RUBBER(LB-40),OD11,DP-1,-	
226	AH90-10694A	ASSY-PCB HALL SENSOR;SDR-130,DOM	
227	AH31-10028A	MOTOR-FEED;DP,RF-300C-11440,D/V5.9,60HZ	
228	AH91-60125A	ASSY-BRKT DECK;DP-1,DVD860,-	
229	AH61-50279A	SHAFT-SYNCRO;DP,SUM24L+ZN,OD2,L119,ZPC,YEL,	
230	AH66-22005A	GEAR-SYNCRO-A;DP,KEPITAL F20-03,M0.5,Z16,BLK	
231	AH66-10023A	PULLEY-MOTOR;DP,KEPITAL F20-03,BLK,	
901	AH60-10151A	SCREW-TAP TITE;DP,SPEC6.8 ,PH,+,CP,M2,L5,ZPC	
902	AC60-10051A	SCREW-TAPPING;BH,-,-,M3,L8,FZY	
903	AH60-10143U	SCREW-TAP TITE;DP,PH,+,SPEC,TAP1.7,L5,ZPC	
904	AH60-10145A	SCREW-TAP TITE;DP,PH,+,SPEC OD5.5 FP,TAP1.7,L	
905	AH60-10147A	SCREW-MACHINE;DP,CH,+,FP,M2,L4,ZPC,SWRCH10A,	
906	AH60-10143Q	SCREW-MACHINE;DP,CH,+,FP,M1.7,L4,ZPC,SWRCH10	
907	6001-000012	SCREW-MACHINE;CH,+,M1.7,L2.0,NYLOCK(WHT),SW	
908	AC60-10042A	SCREW-TAPPING;PWH,+,-,M3,L8,-	
909	6001-000002	SCREW-MACHINE;CH,+,M1.7,L3	

9-4 Remote Control

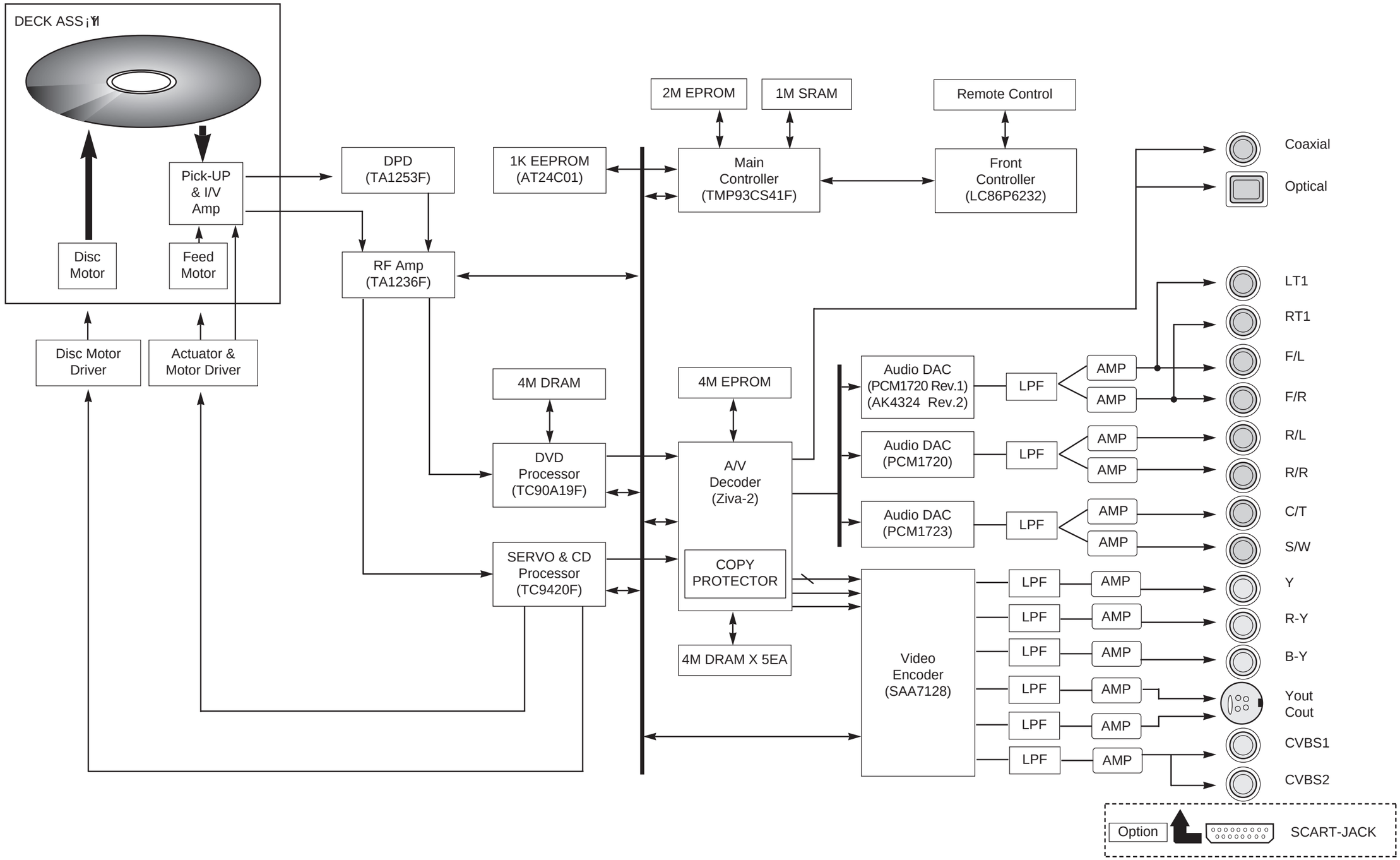
AH59-10087D REMOCON-ASSY;-,-,-,48,DVD905,S.S
AH64-50327A DOOR-BATTERY;-,ABS94,HB,T2,L71 W60 H18,D/GR

10. Packing Diagram



MEMO

12. Block Diagram



13. PCB Diagrams

13-1 MAIN Rev.1

13-1-1 COMPONENT SIDE

13-1-2 SOLDER SIDE

13-2 FRONT (DVD-907)

13-3 FRONT (DVD-927)

13-4 SMPS

13-5 DECK

13-6 MAIN Rev.2

13-6-1 COMPONENT SIDE

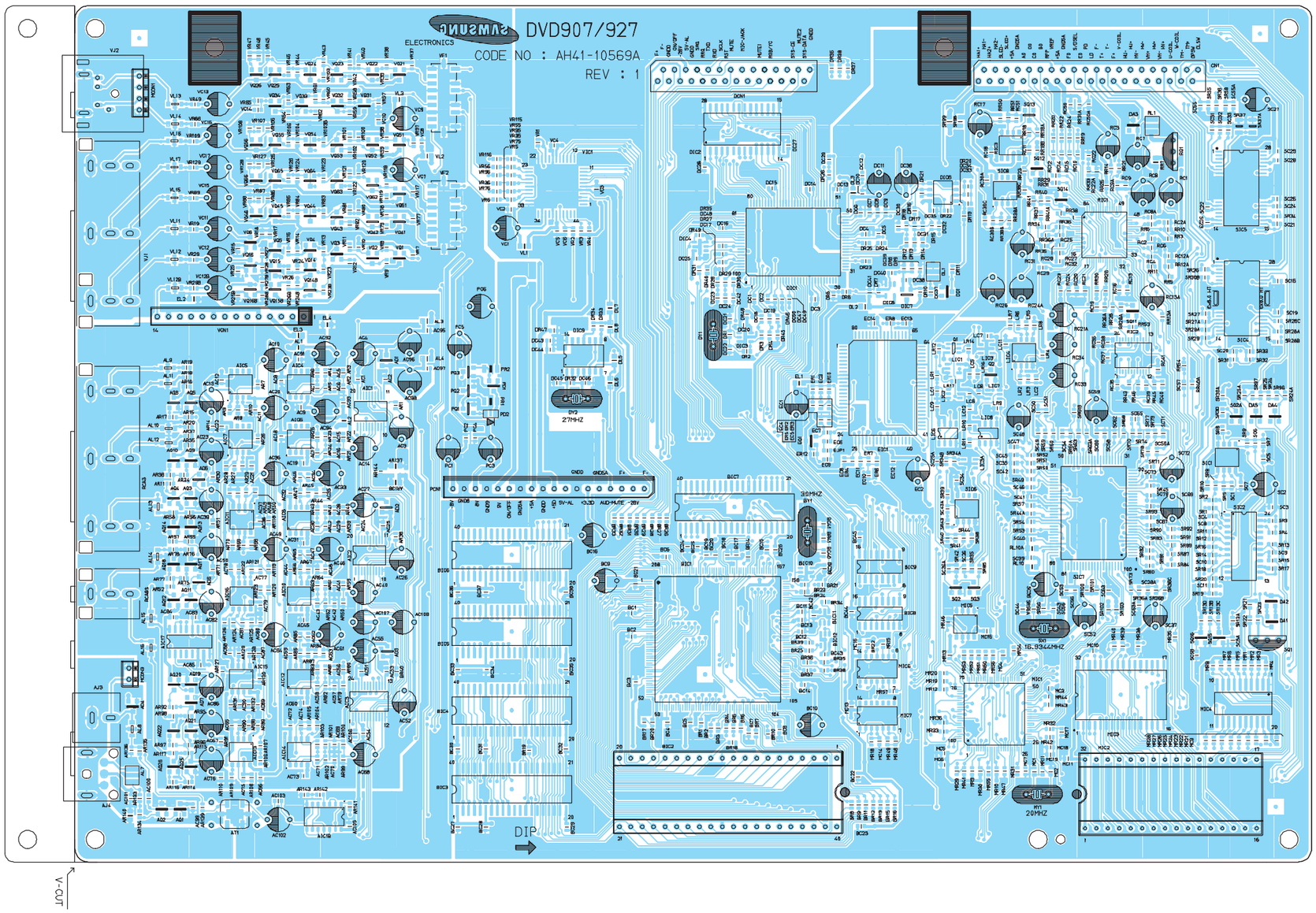
13-6-2 SOLDER SIDE

13-7 SCART JACK

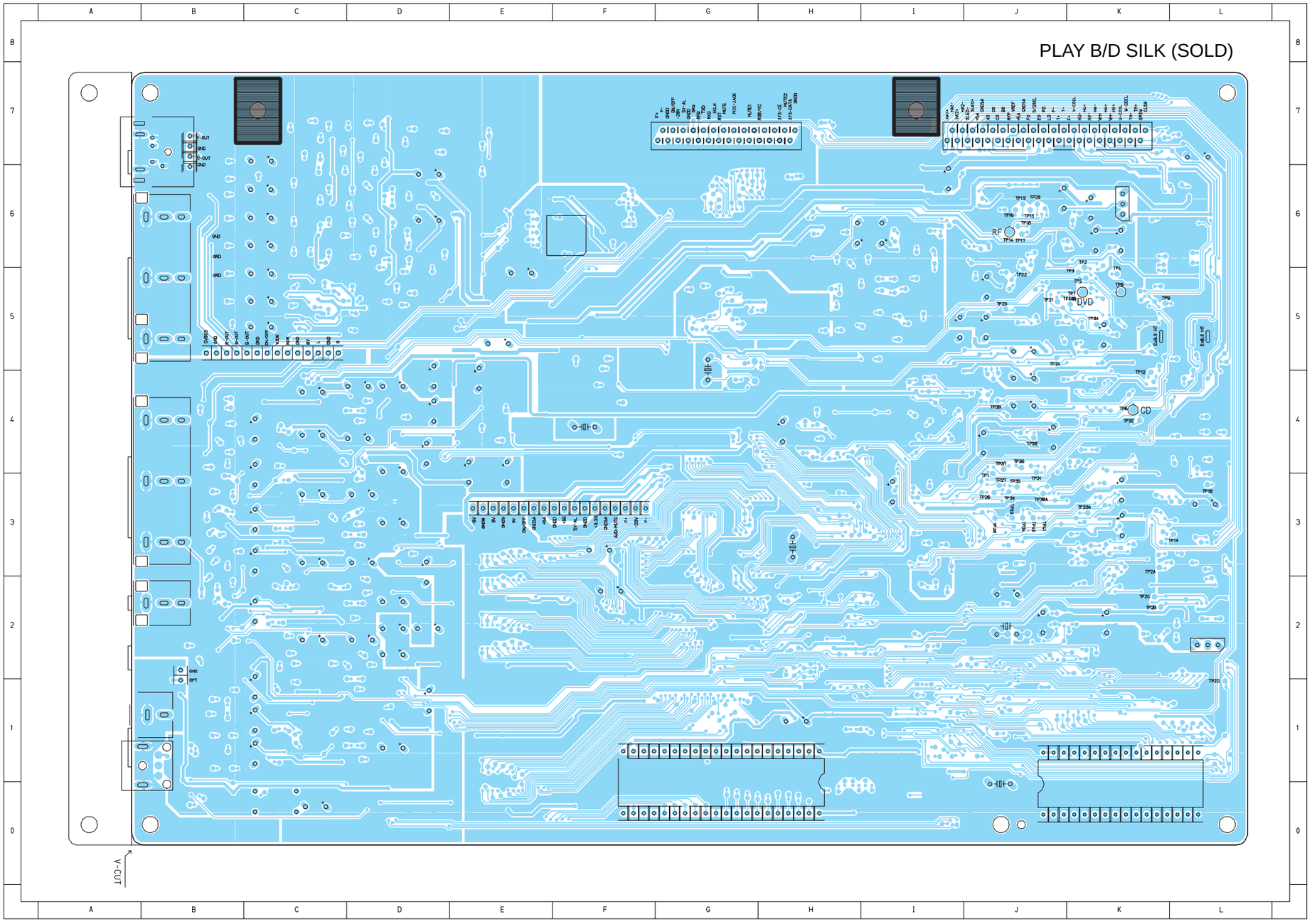
13-1 MAIN

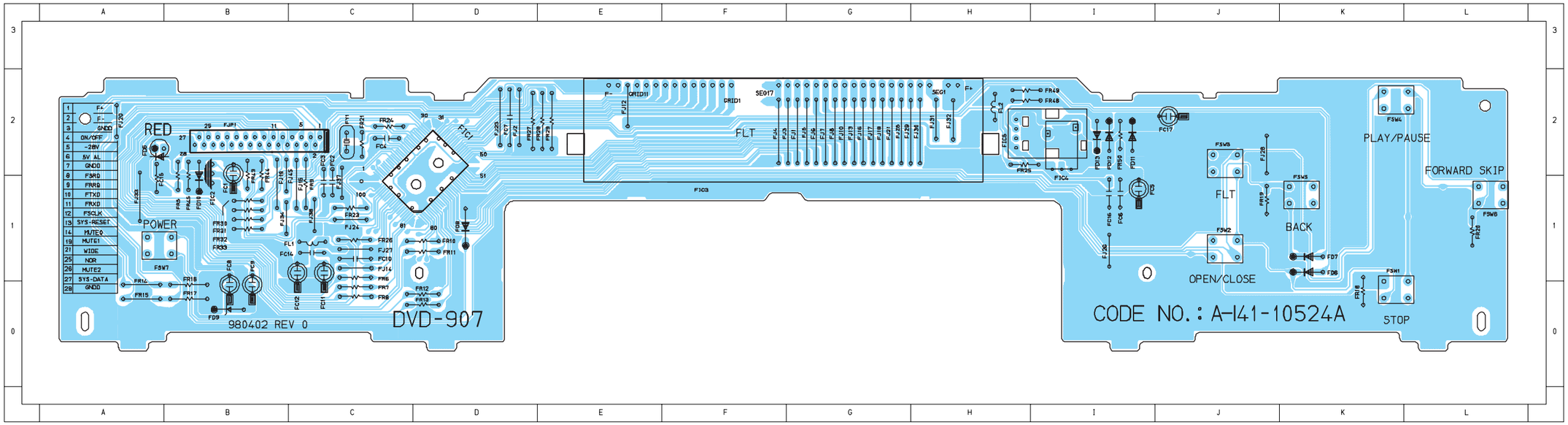
13-1-1 COMPONENT SIDE

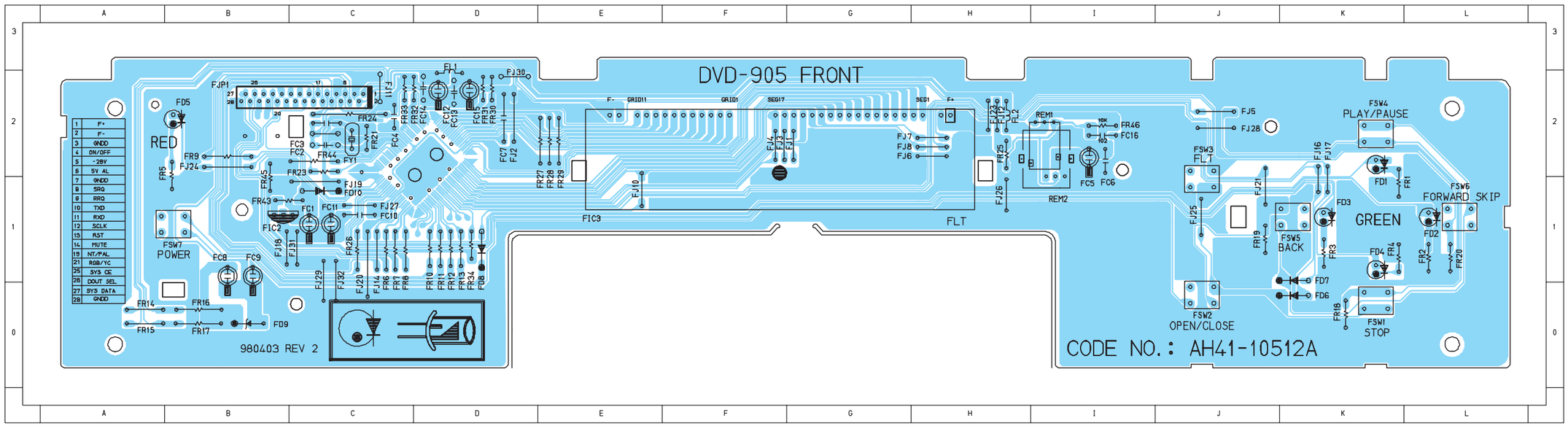
PLAY B/D SILK (COMP)

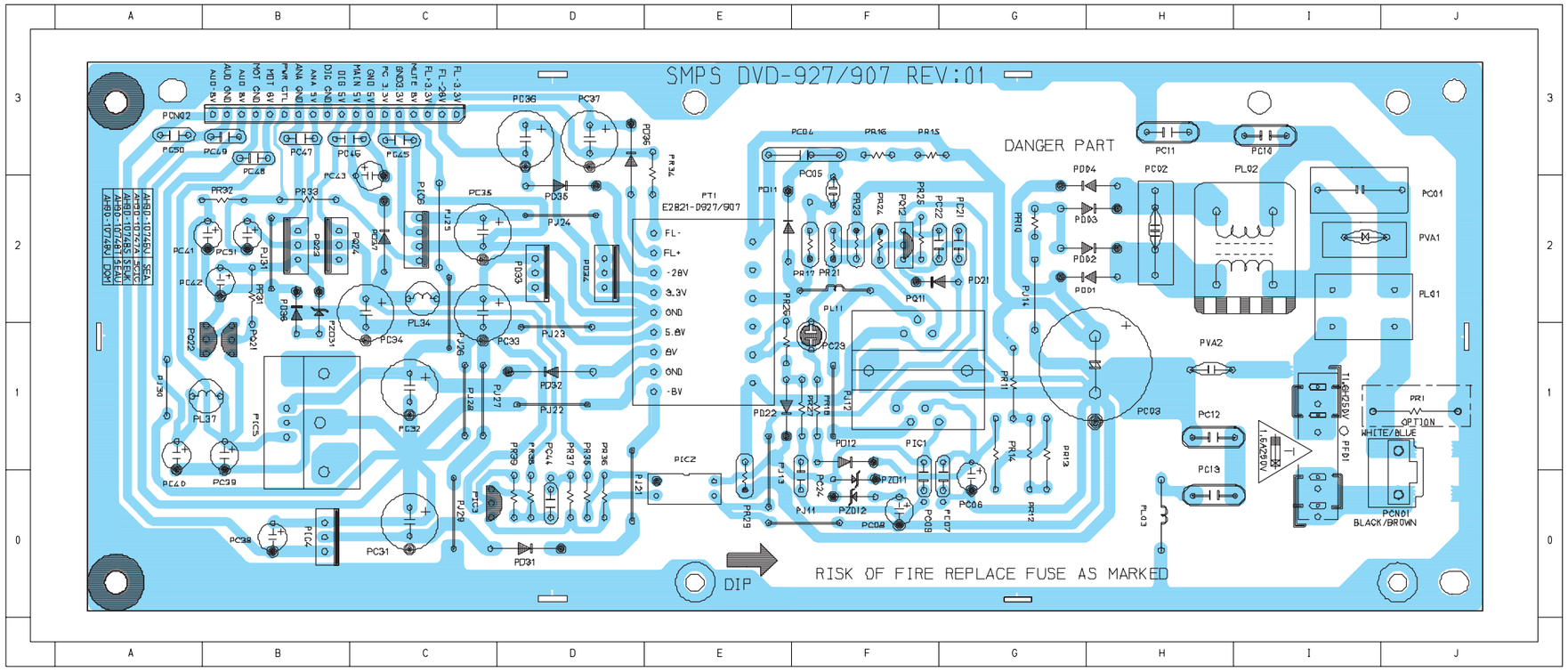


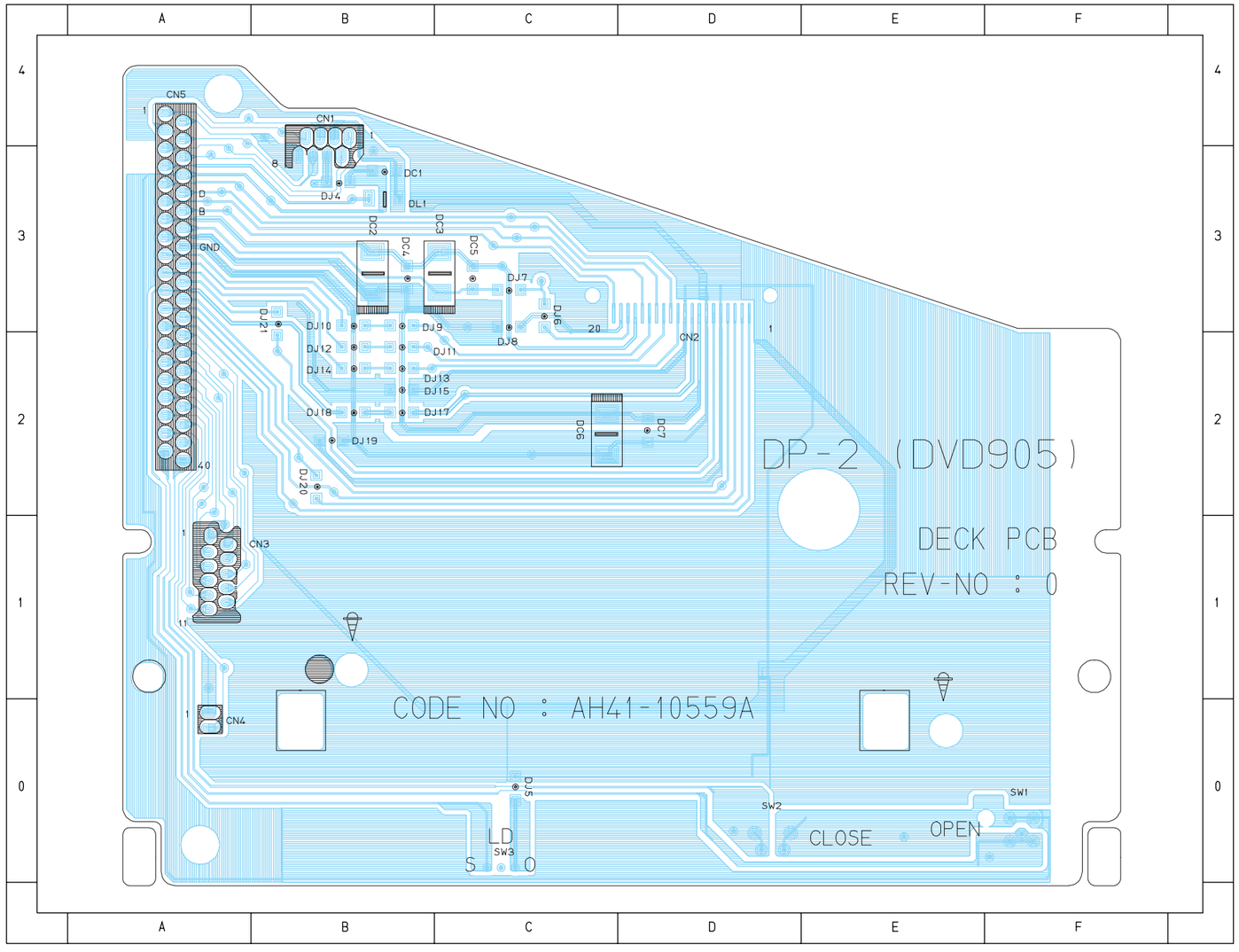
13-1-2 SOLDER SIDE

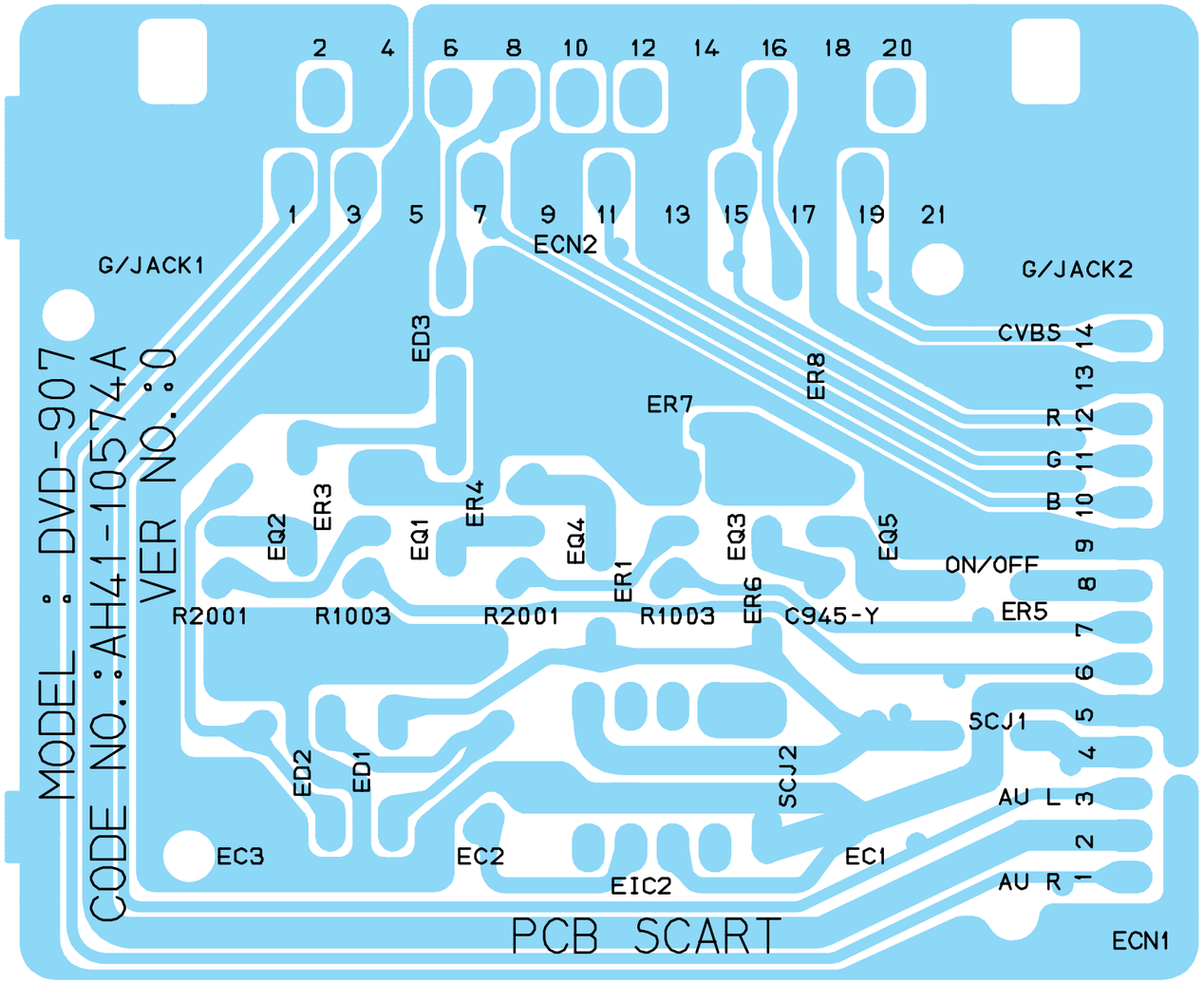



RED
POWER
FLT
PLAY/PAUSE
FORWARD SKIP
FLT
BACK
OPEN/CLOSE
STOP
980402 REV 0
DVD-907
CODE NO.: A-I41-10524A

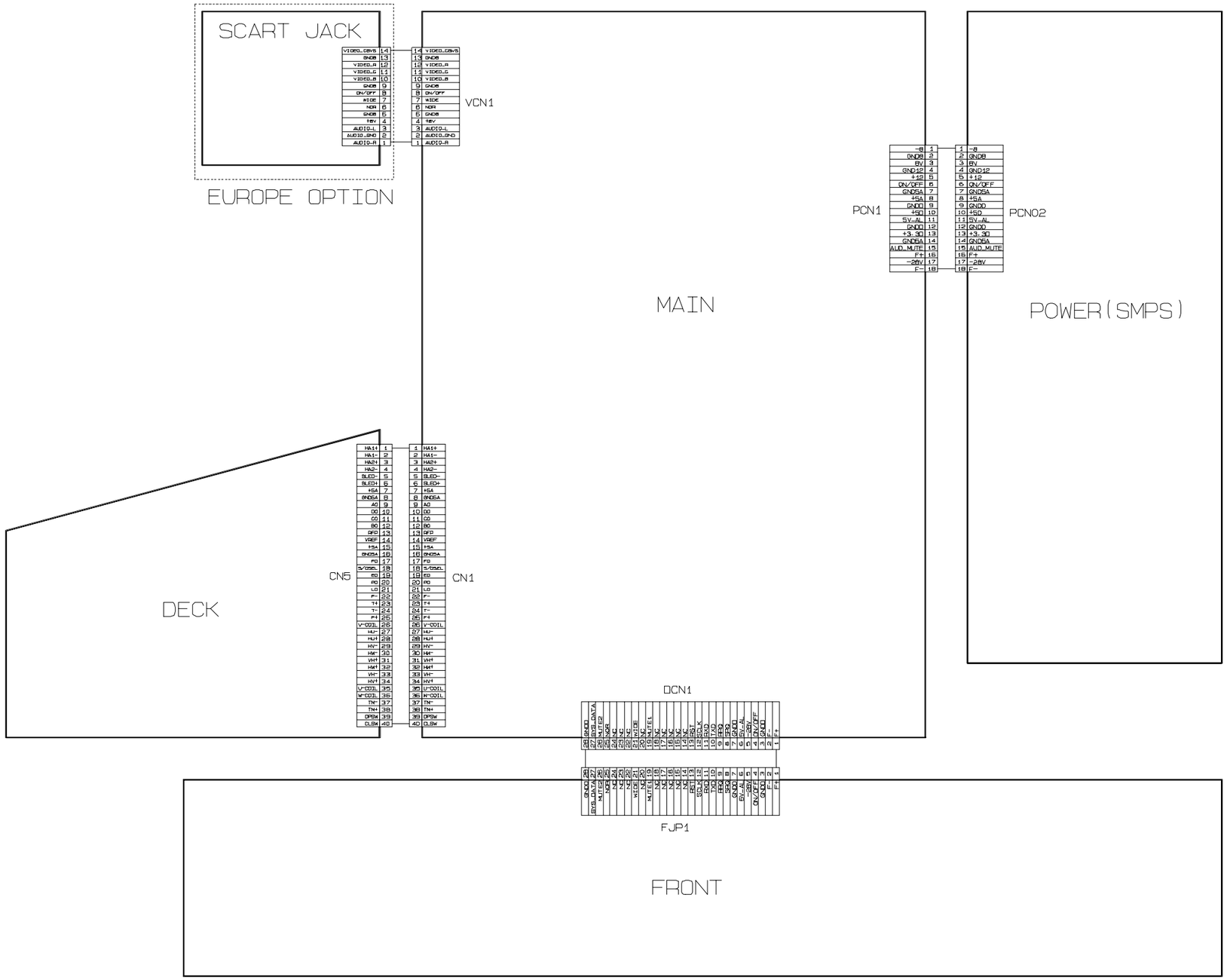

DVD-905 FRONT
RED
POWER
PLAY/PAUSE
FORWARD SKIP
BACK
STOP
OPEN/CLOSE
GREEN
FLT
REM1
REM2
980403 REV 2
CODE NO.: AH41-10512A


SMPS DVD-927/907 REV:01
DANGER PART
RISK OF FIRE REPLACE FUSE AS MARKED
DIP
PCN02
PCN01
PCN61
PT1
E2821-D927/907
FL-
FL+
-28V
3.3V
GND
5.8V
8V
GND
-8V
PVA1
PVA2
PL01
PL02
PL03
PIC1
PIC2
PIC4
PIC5
PF01
PR1
OPTION
WHITE/BLUE
BLACK/BROWN
T1.6A250V
1.6A250V


A
B
C
D
E
F
4
3
2
1
0
CN5
CN1
CN3
CN4
CN2
DC1
DC2
DC3
DC4
DC5
DC6
DC7
DL1
DJ4
DJ7
DJ8
DJ9
DJ10
DJ11
DJ12
DJ13
DJ14
DJ15
DJ16
DJ17
DJ18
DJ19
DJ20
DJ21
GND
DP-2 (DVD905)
DECK PCB
REV-NO : 0
CODE NO : AH41-10559A
LD
SW1
SW2
SW3
CLOSE
OPEN


MODEL : DVD-907
CODE NO. : AH41-10574A
VER NO. : 0
PCB SCART
G/JACK1
G/JACK2
ECN2
ECN1
2 4 6 8 10 12 14 16 18 20
1 3 5 7 9 11 13 15 17 19 21
ED3
ER7
ER8
CVBS
R
G
B
14 13 12 11 10 9 8 7 6 5 4 3 2 1
EQ2
ER3
EQ1
ER4
EQ4
ER1
EQ3
ER6
EQ5
ON/OFF
ER5
R2001
R1003
R2001
R1003
C945-Y
SCJ1
SCJ2
ED2
ED1
AU L
AU R
EC3
EC2
EIC2
EC1

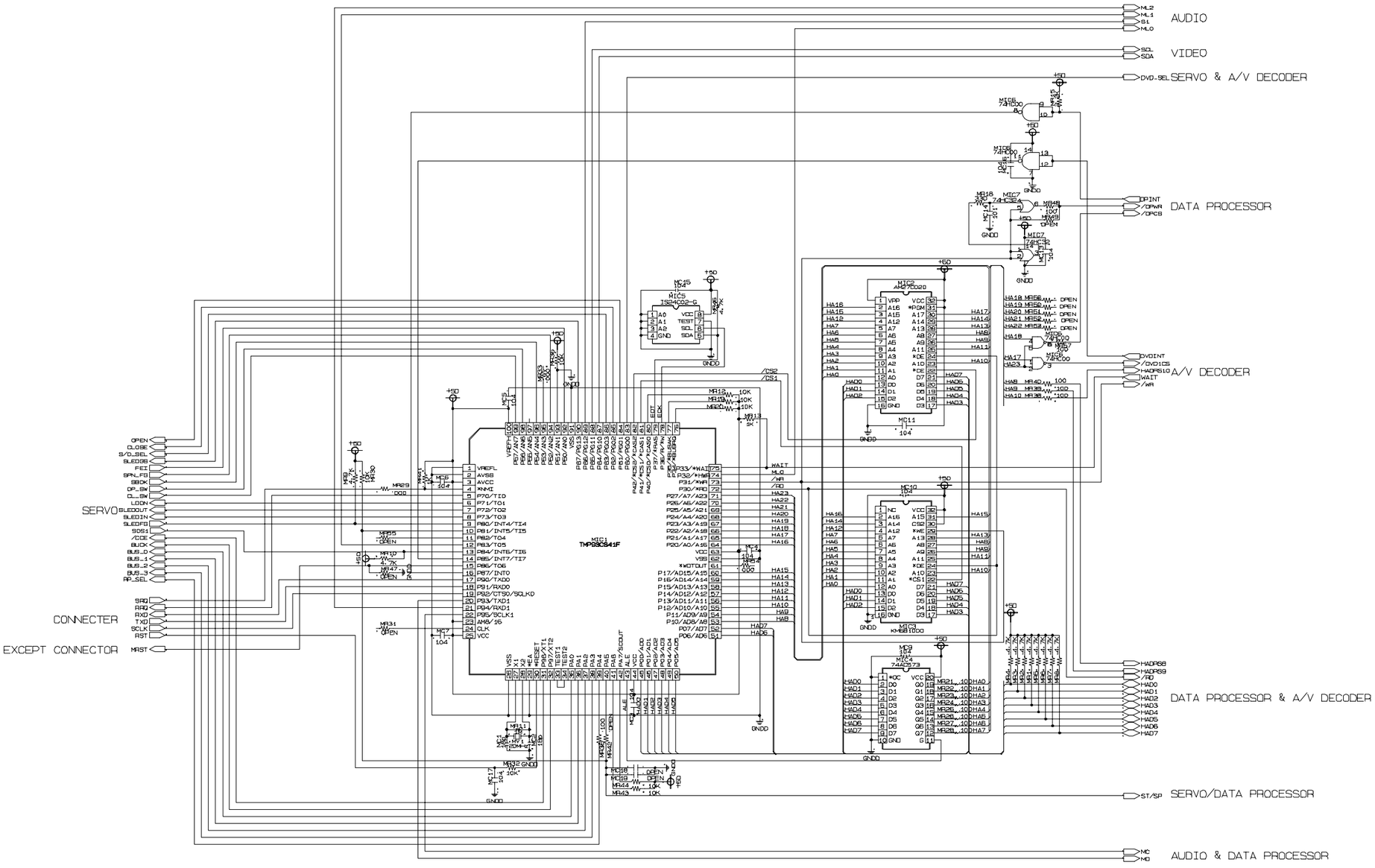
14. Wiring Diagram



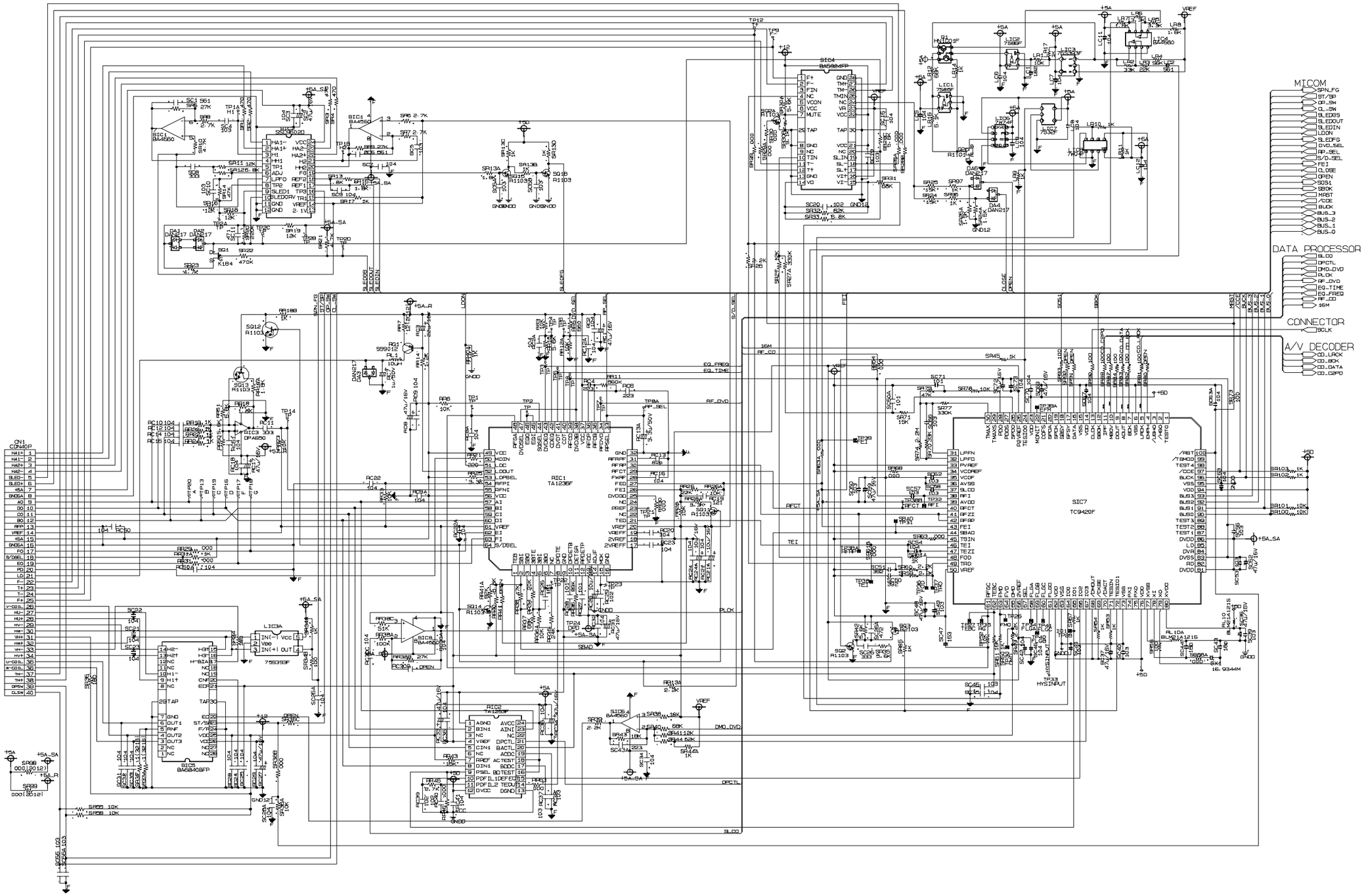
15. Schematic Diagrams

15-1 MAIN Rev.1
15-1-1 MICOM
15-1-2 SERVO
15-1-3 DATA PROCESSOR
15-1-4 A/V DECODER
15-1-5 AUDIO
15-1-6 VIDEO
15-1-7 CONNECTOR
15-2 Front
15-2-1 DVD-907
15-2-2 DVD-927
15-3 SMPS
15-4 PICK-UP/DECK
15-5 MAIN Rev.2
15-5-1 MICOM
15-5-2 SERVO
15-5-3 DATA PROCESSOR
15-5-4 A/V DECODER
15-5-5-1 AUDIO (DVD-907/927)
15-5-5-2 AUDIO (DVD-80/707)
15-5-6-1 VIDEO (DVD-907/927)
15-5-6-2 VIDEO (DVD-807)
15-5-6-3 VIDEO (DVD-707)
15-5-7 CONNECTOR
15-6 Scart Jack

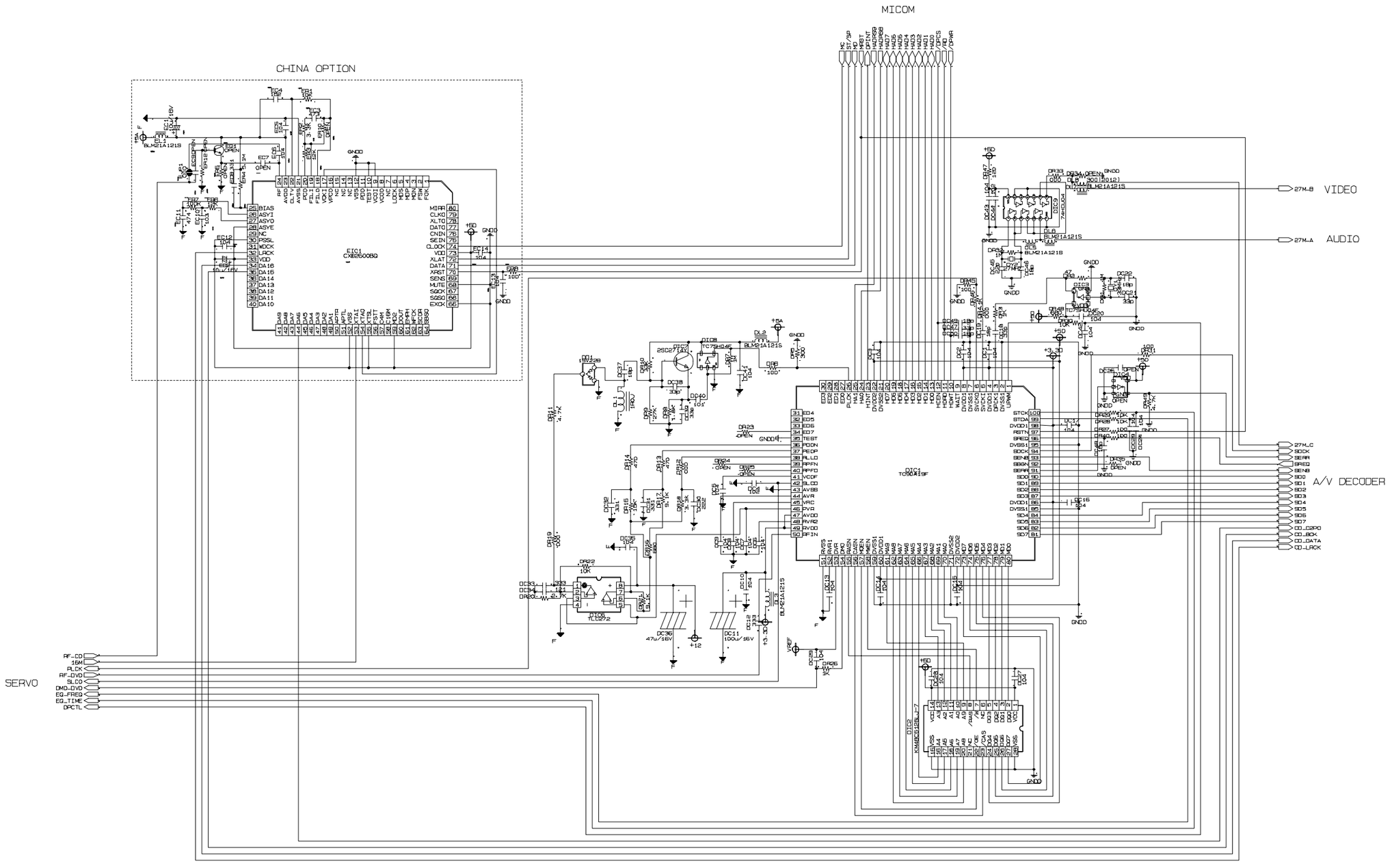
15-1-1 MICOM


AUDIO
VIDEO
SERVO & A/V DECODER
DATA PROCESSOR
A/V DECODER
DATA PROCESSOR & A/V DECODER
SERVO/DATA PROCESSOR
AUDIO & DATA PROCESSOR
SERVO
CONNECTER
EXCEPT CONNECTOR
TMP88C841F
MIC1

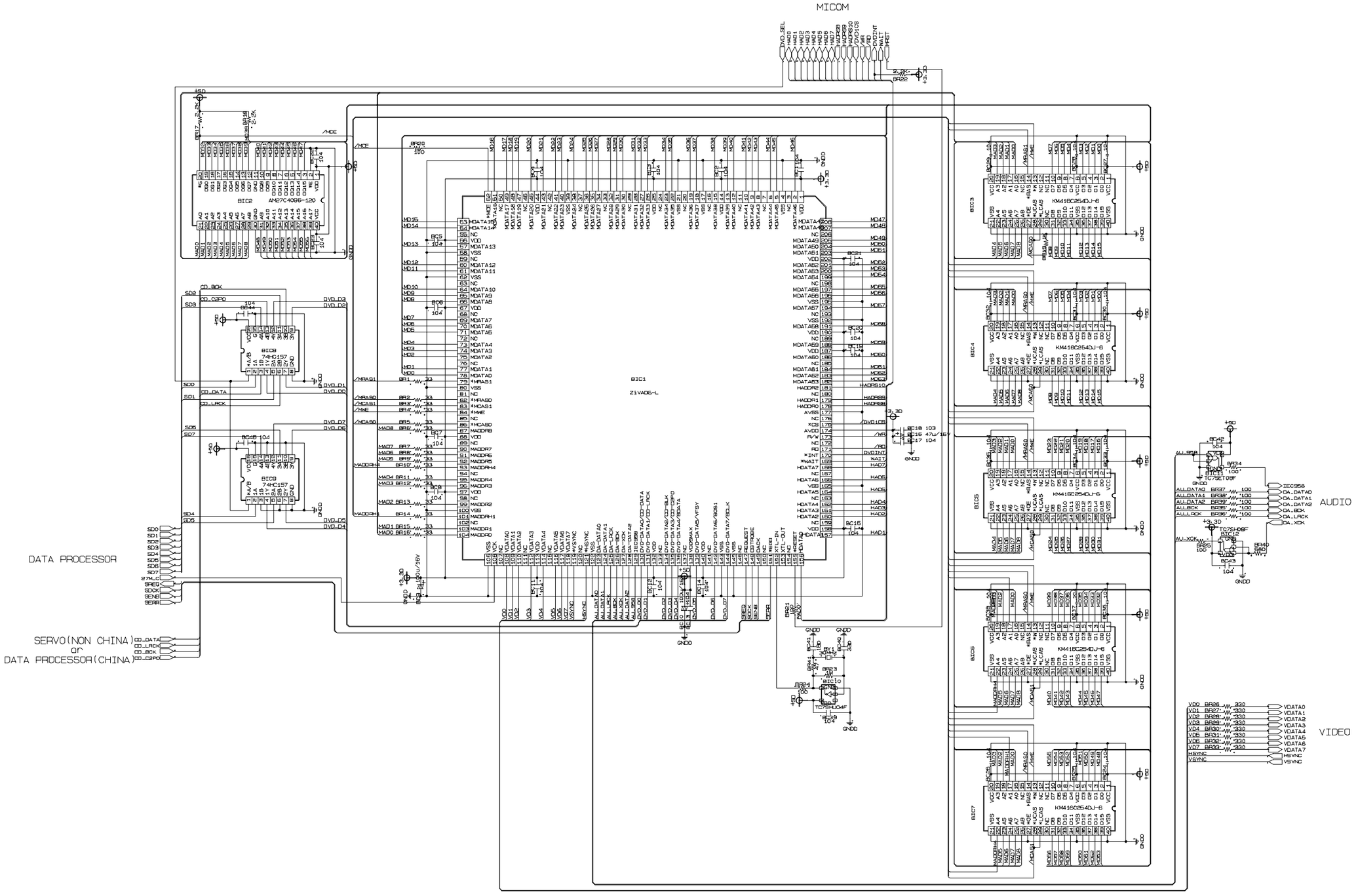
15-1-2 SERVO


MICOM
DATA PROCESSOR
CONNECTOR
A/V DECODER
SIC7
TC9420F
RIC1
TA1236F
SIC4
BA5834FP
SIC1
BA4560
SIC2
BA4580
SIC3
BA4560
SIC5
BA6840BFP
LIC3A
7S393F
DA4
DAN217
CN1
CON60P

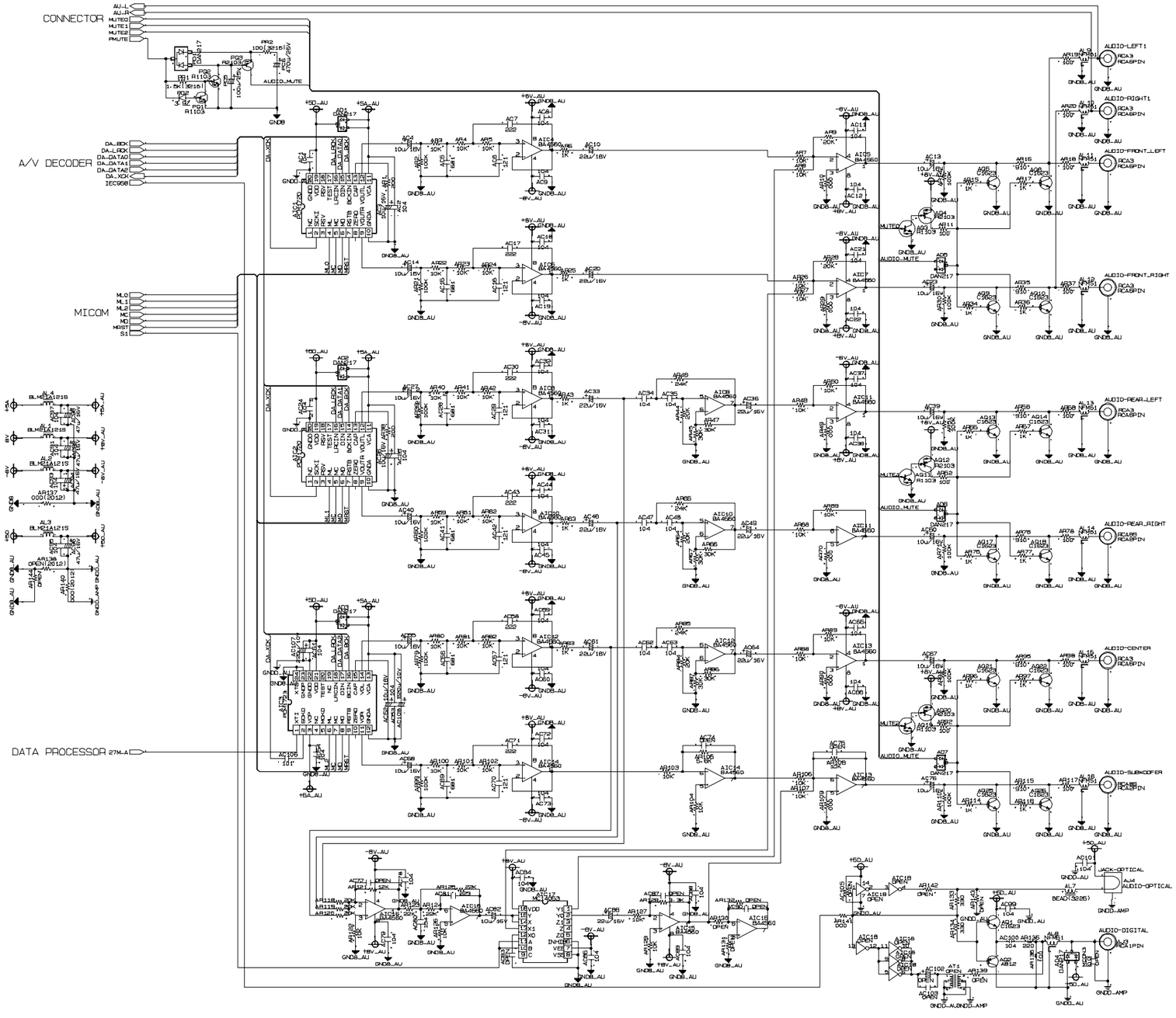
15-1-3 DATA PROCESSOR



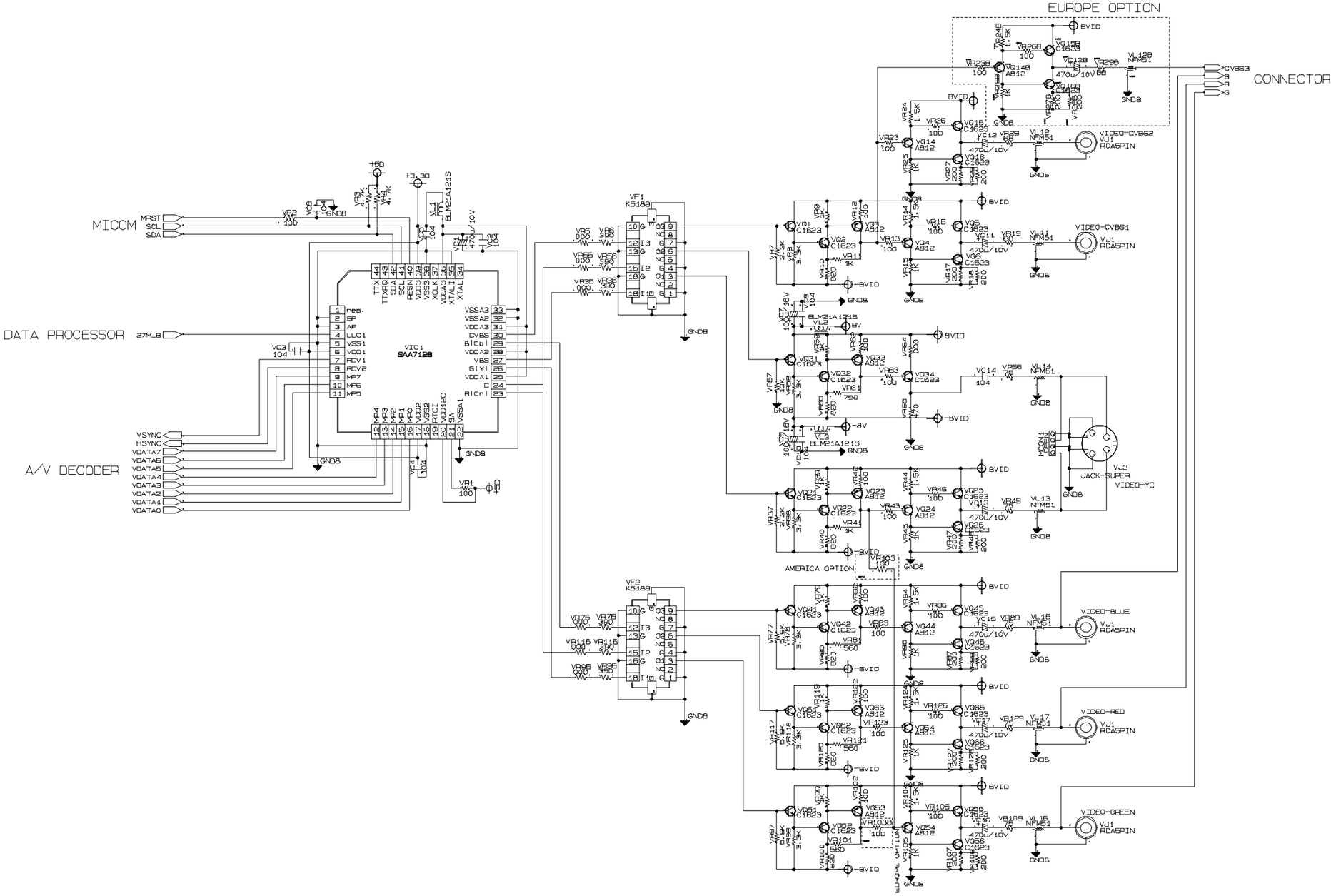
15-1-4 A/V DECODER



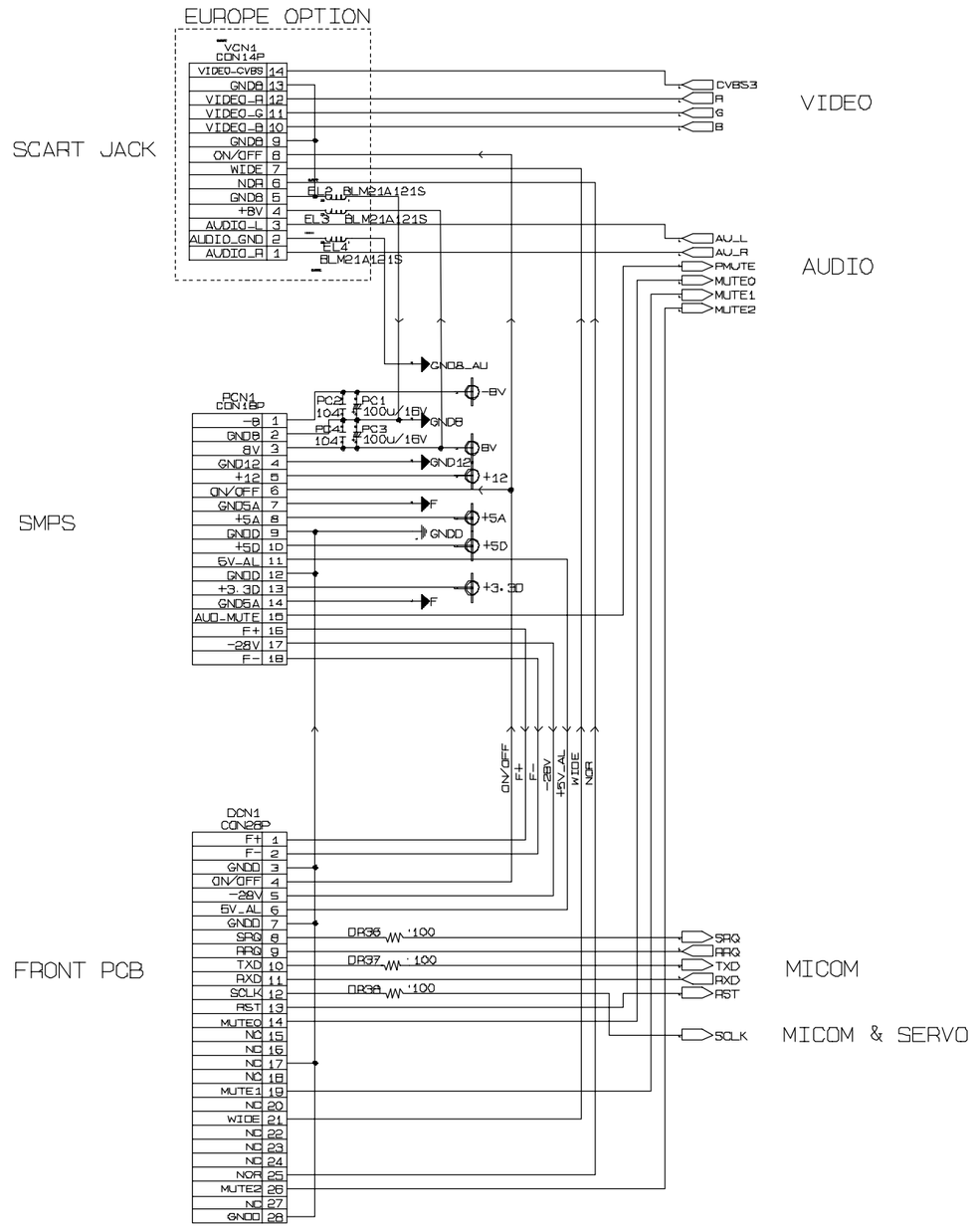
15-1-5 AUDIO


CONNECTOR
A/V DECODER
MICOM
DATA PROCESSOR 27M-A
AUDIO-LEFT1
AUDIO-RIGHT1
AUDIO-FRONT_LEFT
AUDIO-FRONT_RIGHT
AUDIO-REAR_LEFT
AUDIO-REAR_RIGHT
AUDIO-CENTER
AUDIO-SUBWOOFER
JACK-OPTICAL
AUDIO-OPTICAL
AUDIO-DIGITAL
AUDIO_MUTE
GNDS_AU
GNDD_AU
GNDD_AMP

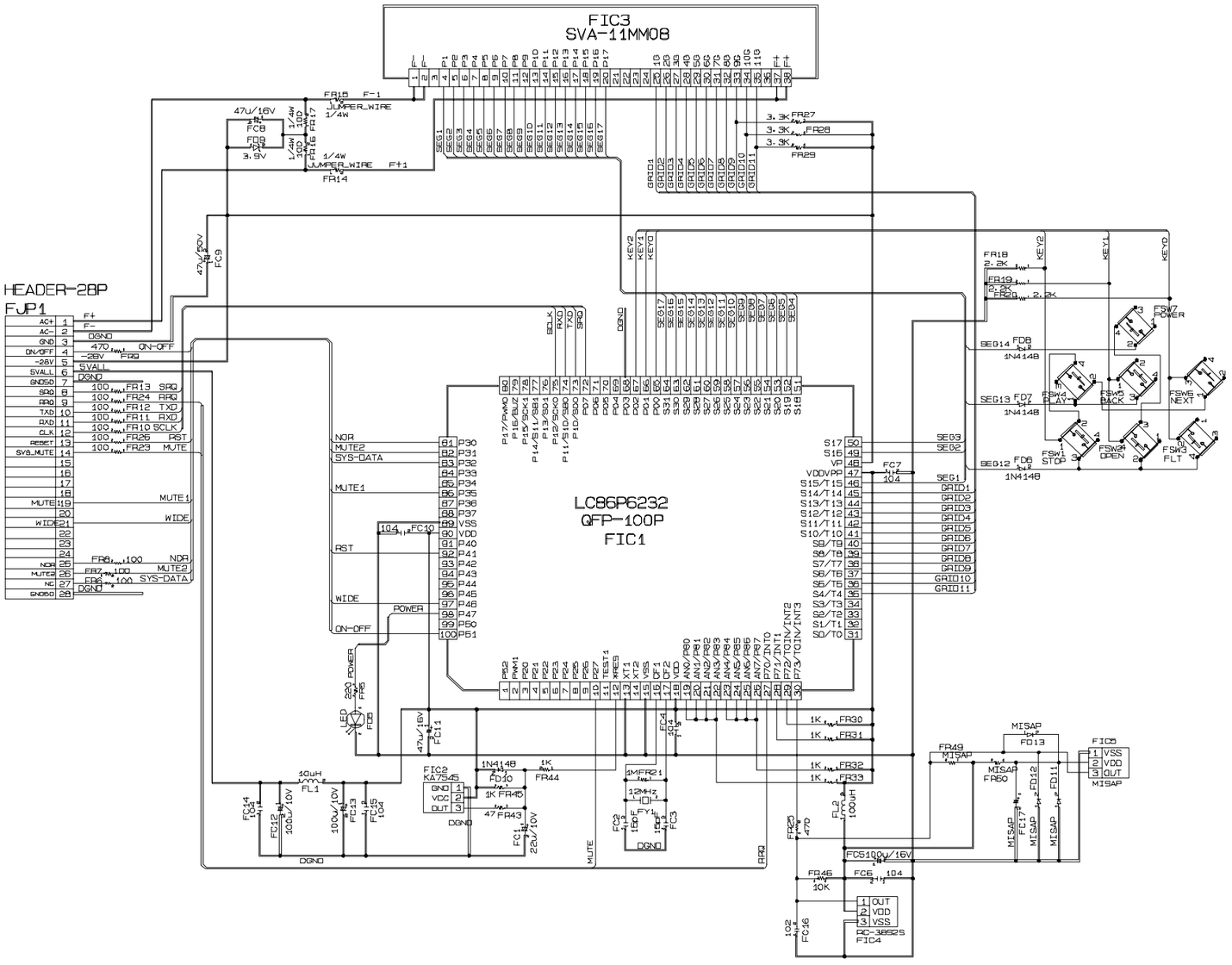
15-1-6 VIDEO


EUROPE OPTION
AMERICA OPTION
CONNECTOR
MICOM
MRST
SCL
SDA
DATA PROCESSOR
27M_B
A/V DECODER
VSYNC
HSYNC
VDATA7
VDATA6
VDATA5
VDATA4
VDATA3
VDATA2
VDATA1
VDATA0
VIC1
SAA7128
VF1
K5189
VF2
K5189
+5D
+3.3D
GND8
8VID
-8V
-8VID
VIDEO-CVBS1
VIDEO-CVBS2
VIDEO-BLUE
VIDEO-RED
VIDEO-GREEN
VIDEO-YC
JACK-SUPER
RCASPIN

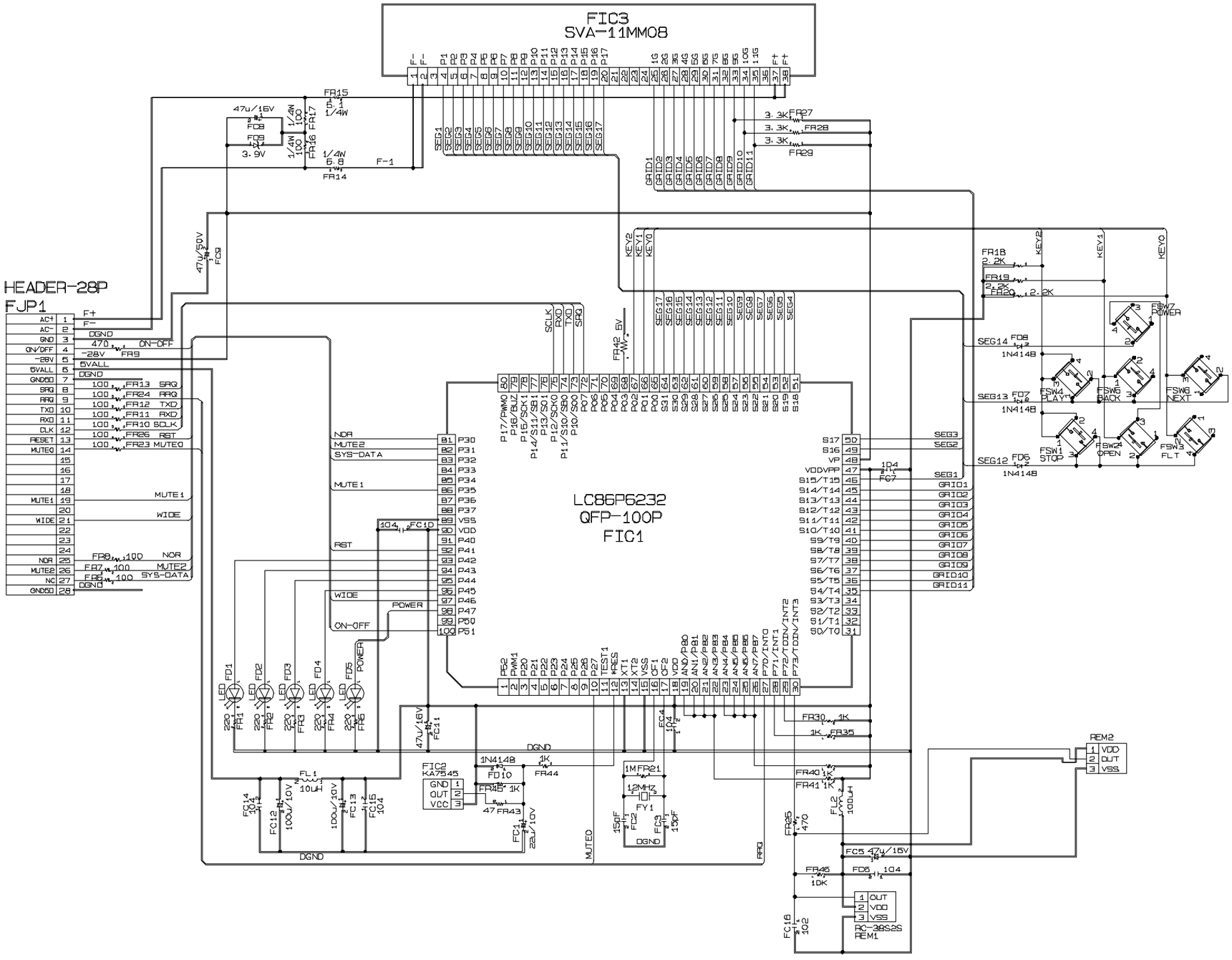
15-1-7 CONNECTOR

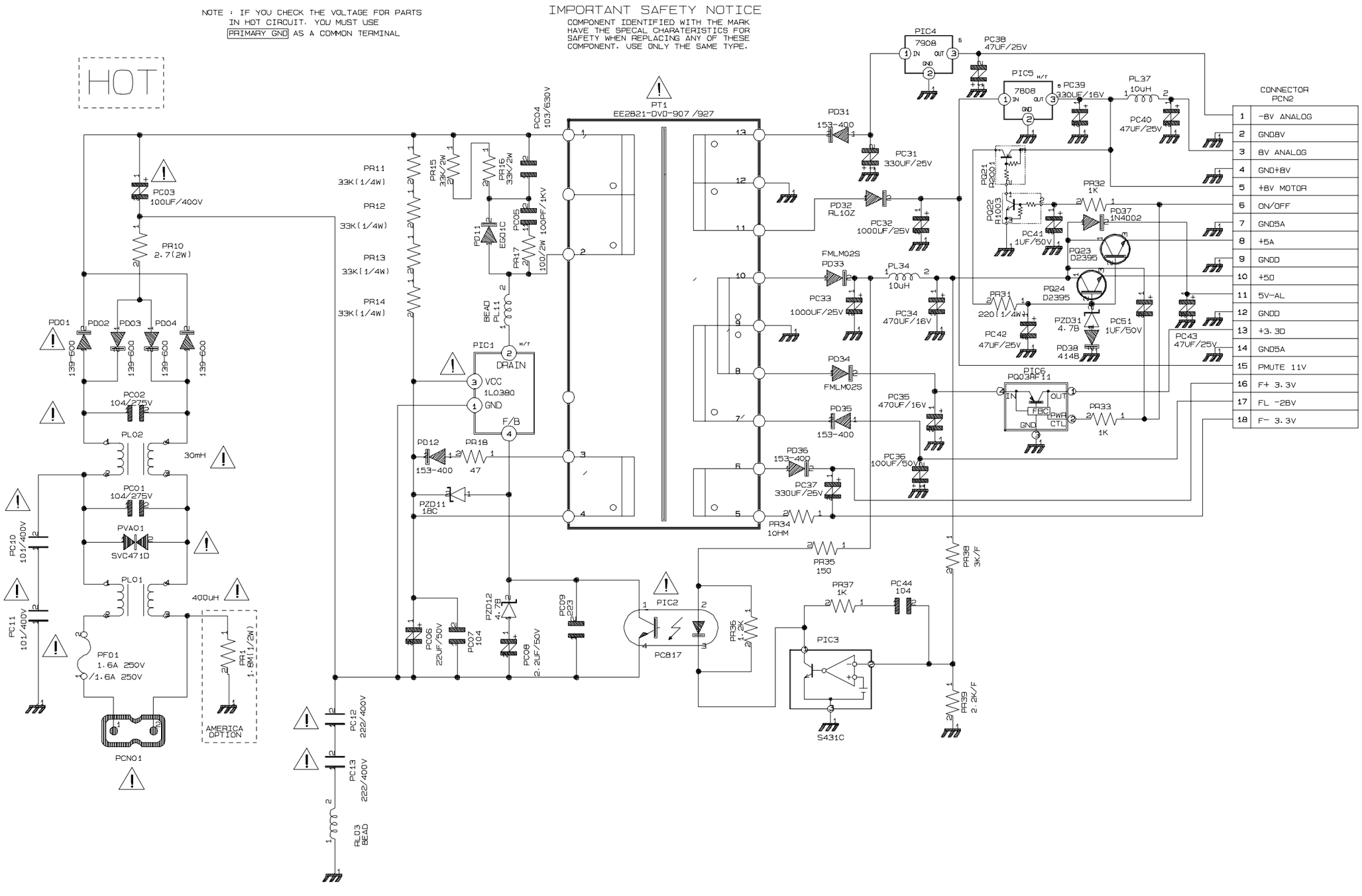


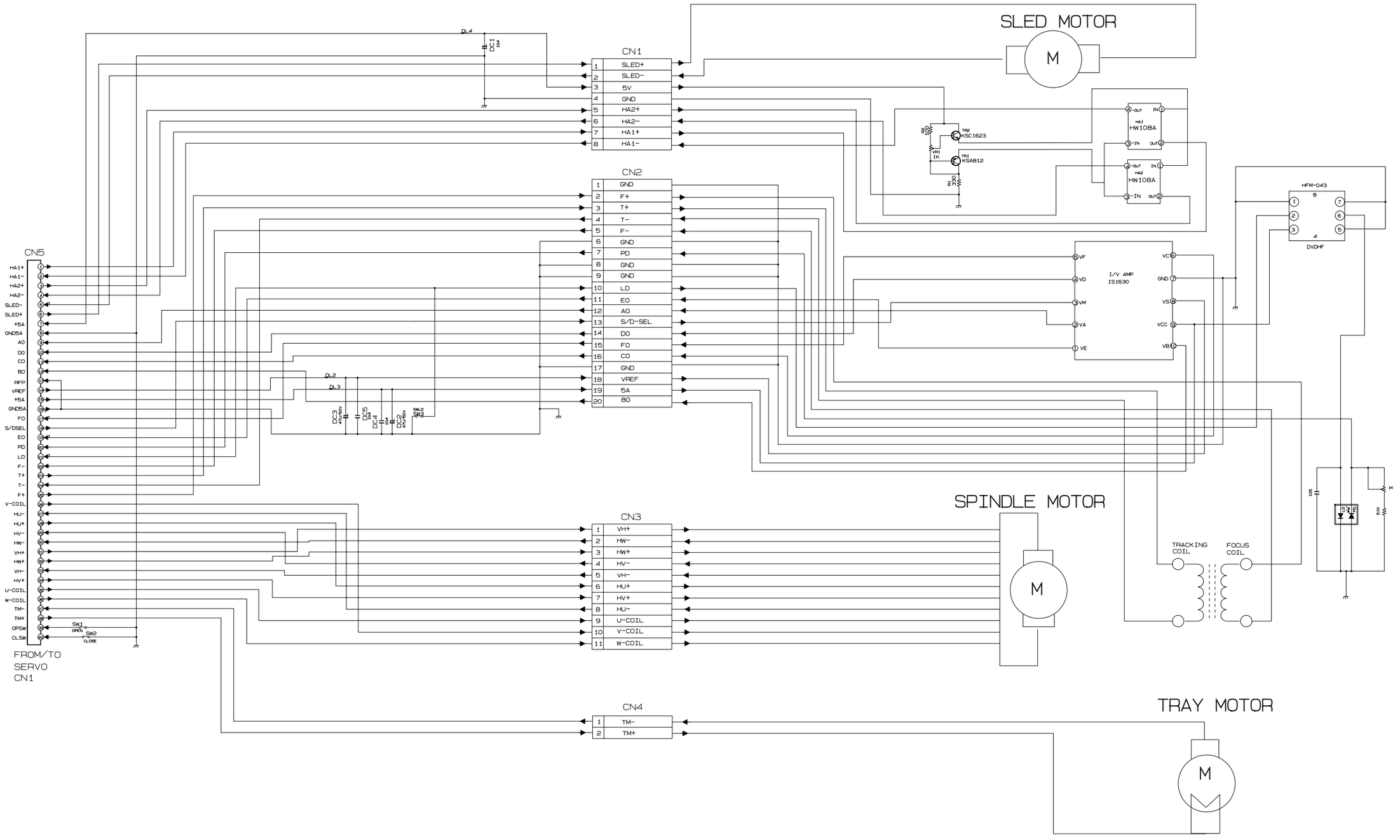
15-2-1 DVD-907


FIC3
SVA-11MM08
HEADER-28P
FJP1
LC86P6232
QFP-100P
FIC1
FIC2
KA7545
FIC4
RC-3852S
FIC5
MISAP
FD13
FD12
FD11
FSW1 STOP
FSW2 FLT
FSW3 OPEN
FSW4 PLAY
FSW5 BACK
FSW6 NEXT
FSW7 POWER
FD6
FD7
FD8
1N4148
FD10
12MHz
MUTE
ARQ
MUTE1
MUTE2
WIDE
RST
POWER
ON-OFF
SYS-DATA
NOR
DGND

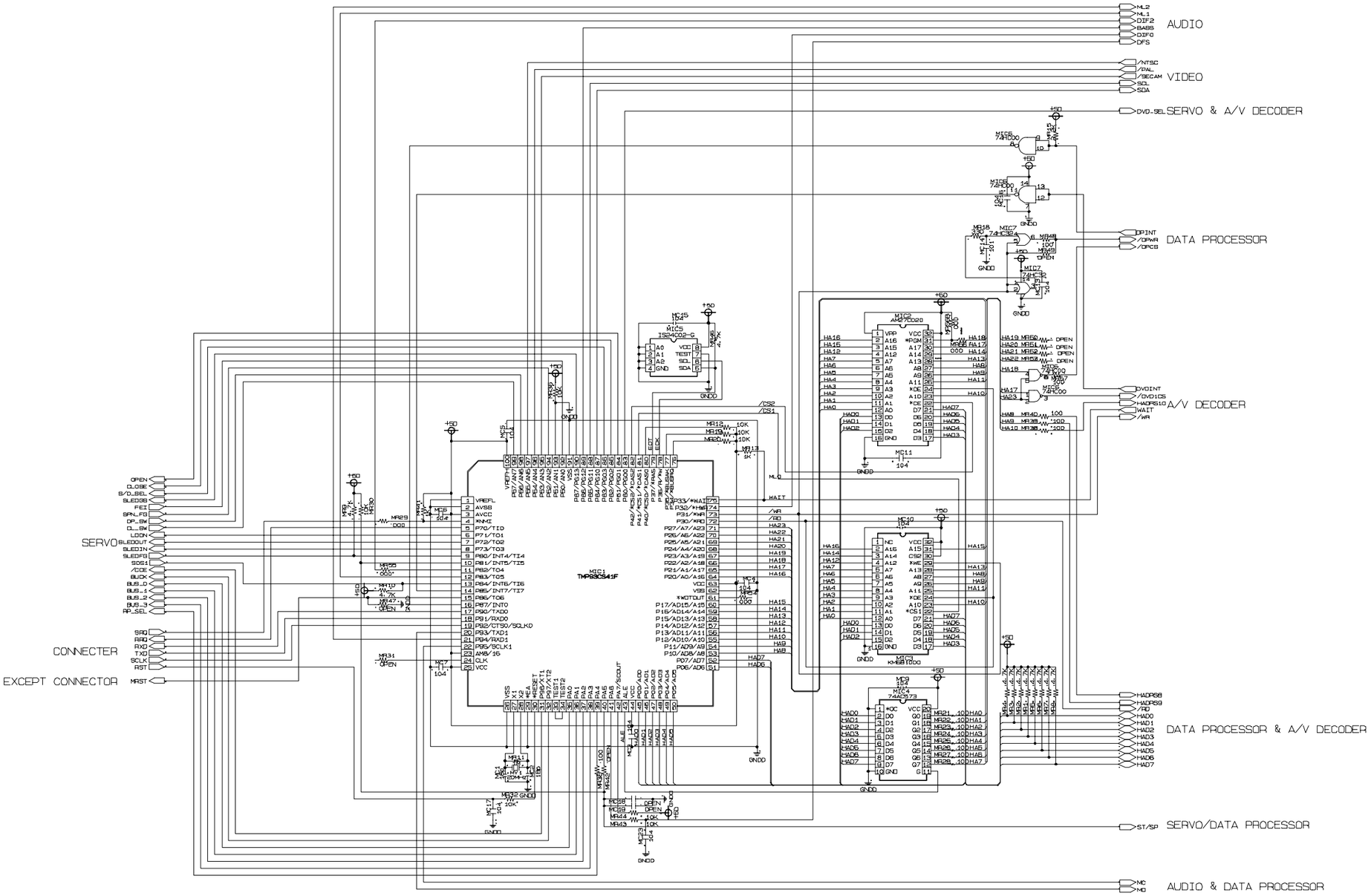
15-2-2 DVD-927


FIC3
SVA-11MM08
HEADER-28P
FJP1
LC86P6232
QFP-100P
FIC1
FIC2
KA7545
REM1
AC-38S2S
REM2
FSW1 STOP
FSW2 OPEN
FSW3 FLT
FSW4 PLAY
FSW5 BACK
FSW6 NEXT
FSW7 POWER
F+
F-
DGND
ON-OFF
-28V
5VALL
SRQ
RRQ
TXD
RXD
SCLK
RST
MUTE1
MUTE2
WIDE
POWER
SYS-DATA
NOR
MUTE
VDD
OUT
VSS

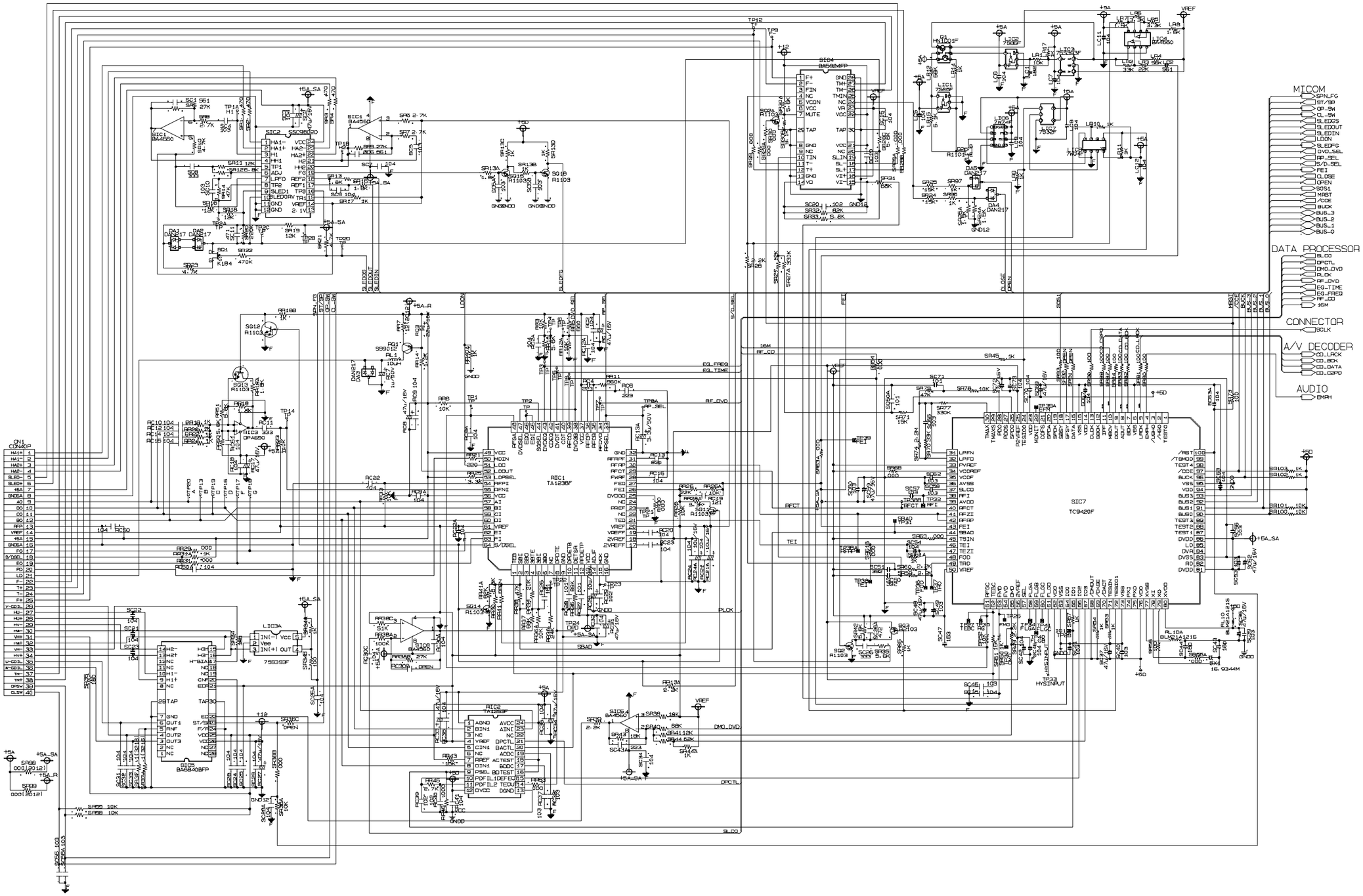

NOTE : IF YOU CHECK THE VOLTAGE FOR PARTS IN HOT CIRCUIT. YOU MUST USE PRIMARY GND AS A COMMON TERMINAL
IMPORTANT SAFETY NOTICE
COMPONENT IDENTIFIED WITH THE MARK HAVE THE SPECAL CHARATERISTICS FOR SAFETY WHEN REPLACING ANY OF THESE COMPONENT. USE ONLY THE SAME TYPE.
HOT
PT1
EE2821-DV0-907/927
PC03 100UF/400V
PR10 2.7(2W)
PR11 33K(1/4W)
PR12 33K(1/4W)
PR13 33K(1/4W)
PR14 33K(1/4W)
PR15 33K/2W
PR16 33K/2W
PC04 103/630V
PC05 100PF/1KV
PD11 EG01C
PR17 100/2W
BEAD PL11
PD01 PD02 PD03 PD04 139-600
PC02 104/275V
PL02 30mH
PC01 104/275V
PVA01 SVC471D
PC10 101/400V
PC11 101/400V
PL01 400uH
PF01 1.6A 250V /1.6A 250V
PR1 1.8M(1/2W)
AMERICA OPTION
PCN01
PIC1 DRAIN VCC GND F/B 1L0380
PD12 153-400
PR18 47
PZD11 18C
PC12 222/400V
PC13 222/400V
RL03 BEAD
PC06 22UF/50V
PC07 104
PZD12 4.7B
PC08 2.2UF/50V
PC09 223
PIC2 PC817
PR36 1.2K
PIC3 S431C
PR37 1K
PC44 104
PR38 3K/F
PR39 2.2K/F
PIC4 7908
PC38 47UF/25V
PIC5 7808
PC39 330UF/16V
PL37 10UH
PC40 47UF/25V
PD31 153-400
PC31 330UF/25V
PD32 RL10Z
PC32 1000UF/25V
PQ21 PQ201
PQ22 PQ1003
PR32 1K
PD37 1N4002
PC41 1UF/50V
PQ23 D2395
PQ24 D2395
PR31 220(1/4W)
PZD31 4.7B
PD38 414B
PC51 1UF/50V
PC42 47UF/25V
PC43 47UF/25V
FMLM02S
PD33
PC33 1000UF/25V
PL34 10UH
PC34 470UF/16V
PD34 FMLM02S
PD35 153-400
PC35 470UF/16V
PIC6 PQ03RF11 IN OUT FBC PWR CTL GND
PR33 1K
PD36 153-400
PC37 330UF/25V
PR34 10HM
PC36 100UF/50V
PR35 150
CONNECTOR PCN2
1 -8V ANALOG
2 GND8V
3 8V ANALOG
4 GND+8V
5 +8V MOTOR
6 ON/OFF
7 GND5A
8 +5A
9 GNDD
10 +5D
11 5V-AL
12 GNDD
13 +3.3D
14 GND5A
15 PMUTE 11V
16 F+ 3.3V
17 FL -28V
18 F- 3.3V


SLED MOTOR
M
CN1
1 SLED+
2 SLED-
3 5V
4 GND
5 HA2+
6 HA2-
7 HA1+
8 HA1-
CN2
1 GND
2 F+
3 T+
4 T-
5 F-
6 GND
7 PD
8 GND
9 GND
10 LD
11 EO
12 AO
13 S/D-SEL
14 DO
15 FO
16 CO
17 GND
18 VREF
19 5A
20 BO
CN5
HA1+
HA1-
HA2+
HA2-
SLED-
SLED+
+5A
GND5A
AO
DO
CO
BO
RFP
VREF
+5A
GND5A
FO
S/DSEL
EO
PD
LD
F-
T+
T-
F+
V-COIL
HU-
HU+
HV-
HW-
VH+
HW+
VH-
HV+
U-COIL
W-COIL
TM-
TM+
OPSW
CLSW
SW1 OPEN
SW2 CLOSE
FROM/TO SERVO CN1
TR2 KSC1623
TR1 KSA812
VR1 1K
HA1 HW108A
HA2 HW108A
I/V AMP IS1630
VF
VD
VM
VA
VE
VC
GND
VS
VCC
VB
HFM-043
DVDHF
CN3
1 VH+
2 HW-
3 HW+
4 HV-
5 VH-
6 HU+
7 HV+
8 HU-
9 U-COIL
10 V-COIL
11 W-COIL
SPINDLE MOTOR
M
TRACKING COIL
FOCUS COIL
CN4
1 TM-
2 TM+
TRAY MOTOR
M

15-5-1 MICOM


AUDIO
VIDEO
SERVO & A/V DECODER
DATA PROCESSOR
A/V DECODER
DATA PROCESSOR & A/V DECODER
SERVO/DATA PROCESSOR
AUDIO & DATA PROCESSOR
SERVO
CONNECTER
EXCEPT CONNECTOR
TMP93CS41F
AM27C020
TS24C02-C
74HC00
74HC04
74HC32
74HC138
74HC573
KM68B100C

15-5-2 SERVO


MICOM
DATA PROCESSOR
CONNECTOR
A/V DECODER
AUDIO
SIC7
TC9420F
RIC1
TA1236F
RIC2
TA1235F
SIC4
BA5834FP
SIC2
SSC9356D
SIC1
BA4560
SIC3
BA6848OBFP
SIC5
BA4560
SIC6
BA4560
SIC8
BA5218
SIC9
BA5218
SIC10
BA5218
SIC11
BA5218
SIC12
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SIC13
BA5218
SIC14
BA5218
SIC15
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SIC21
BA5218
SIC22
BA5218
SIC23
BA5218
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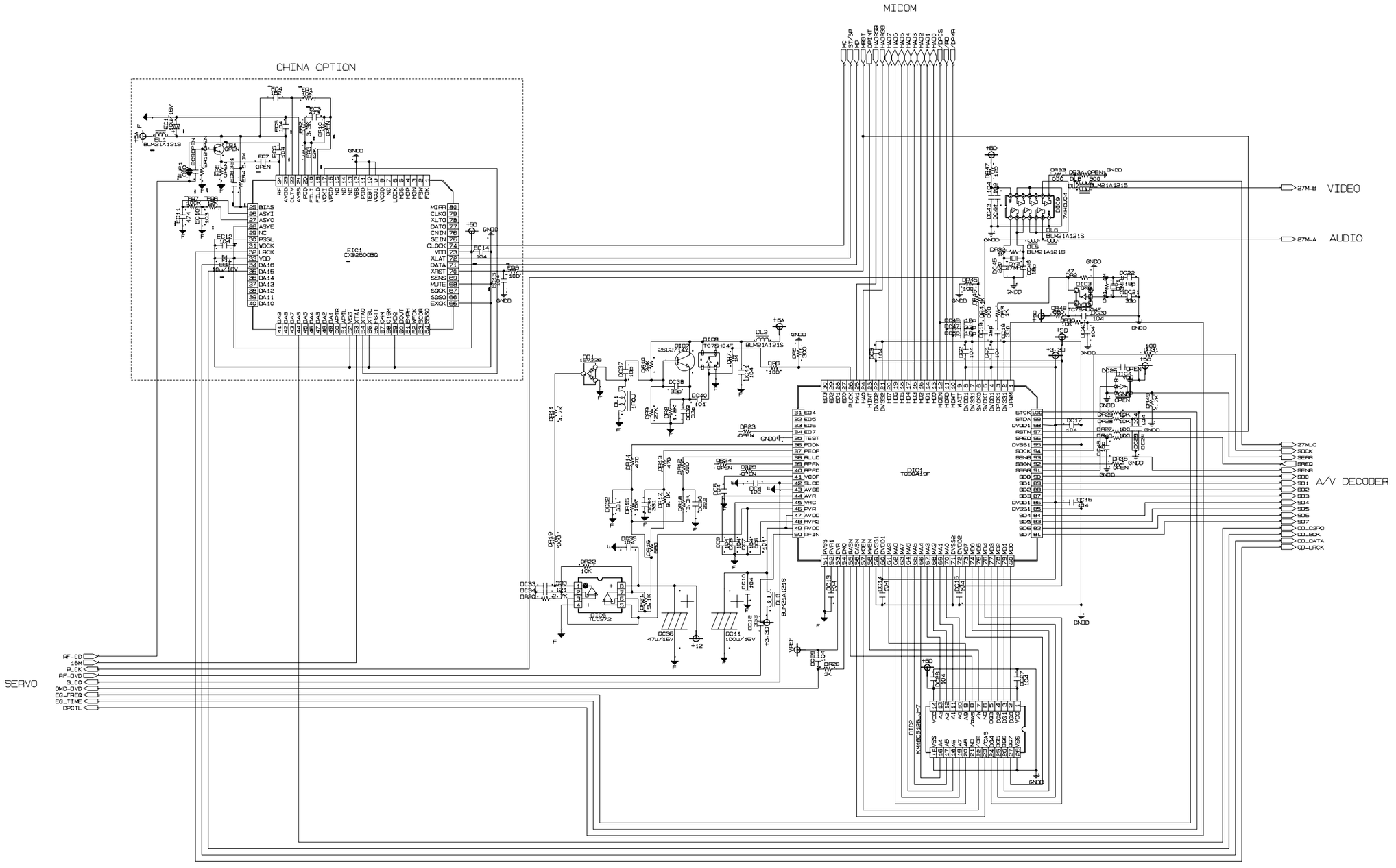
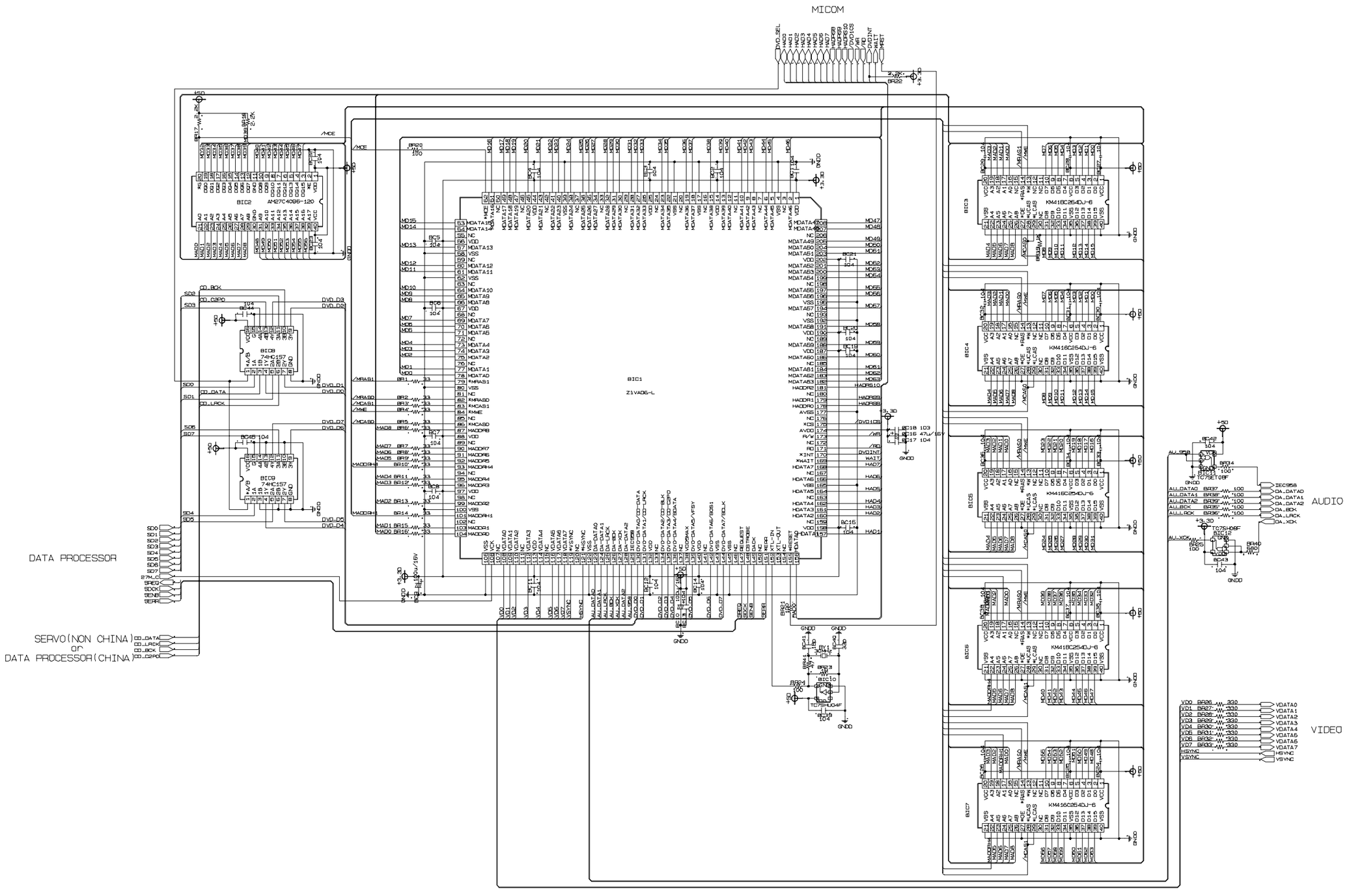
BA5218
SIC25
BA5218
SIC26
BA5218
SIC27
BA5218

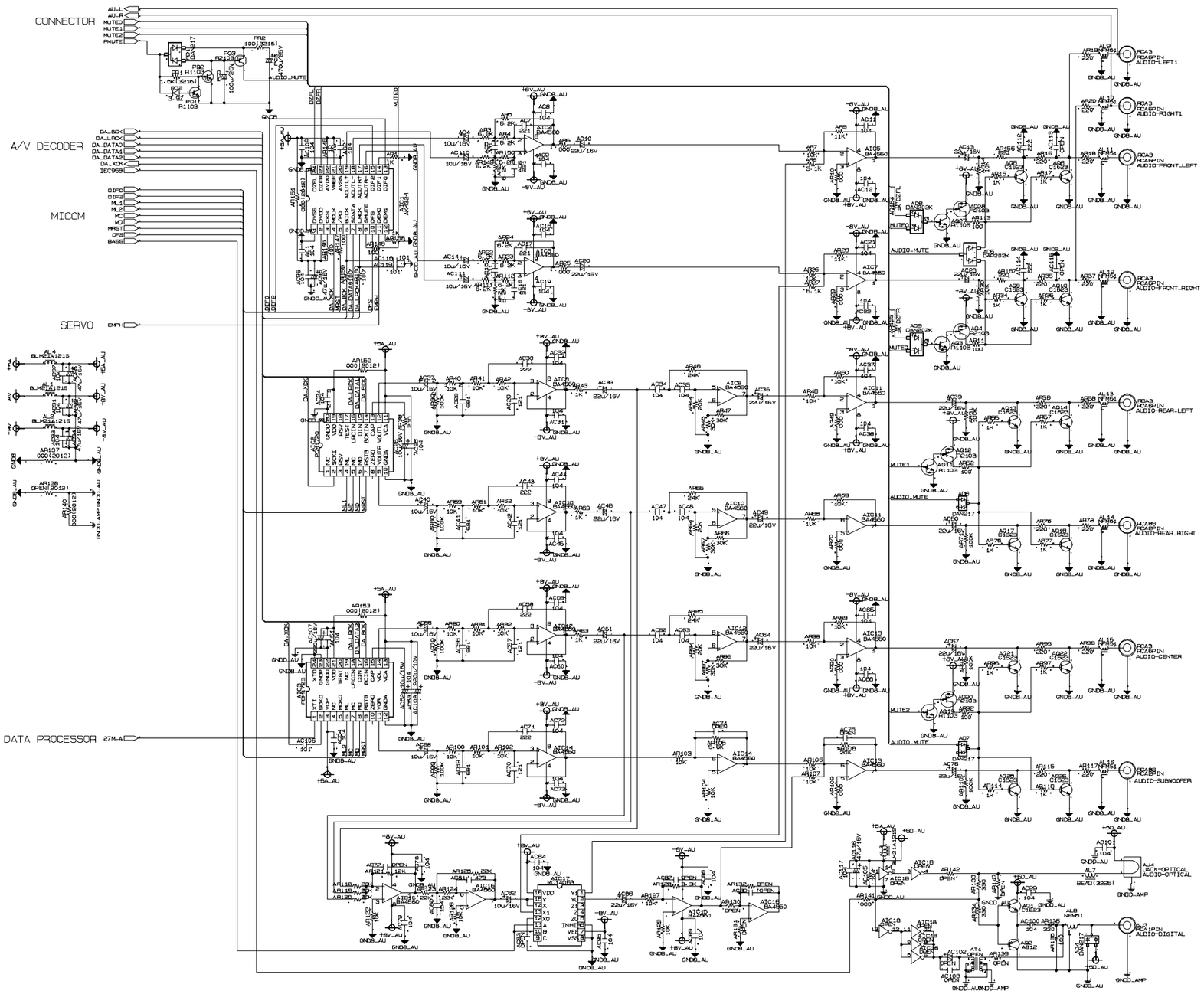
15-5-3 DATA PROCESSOR



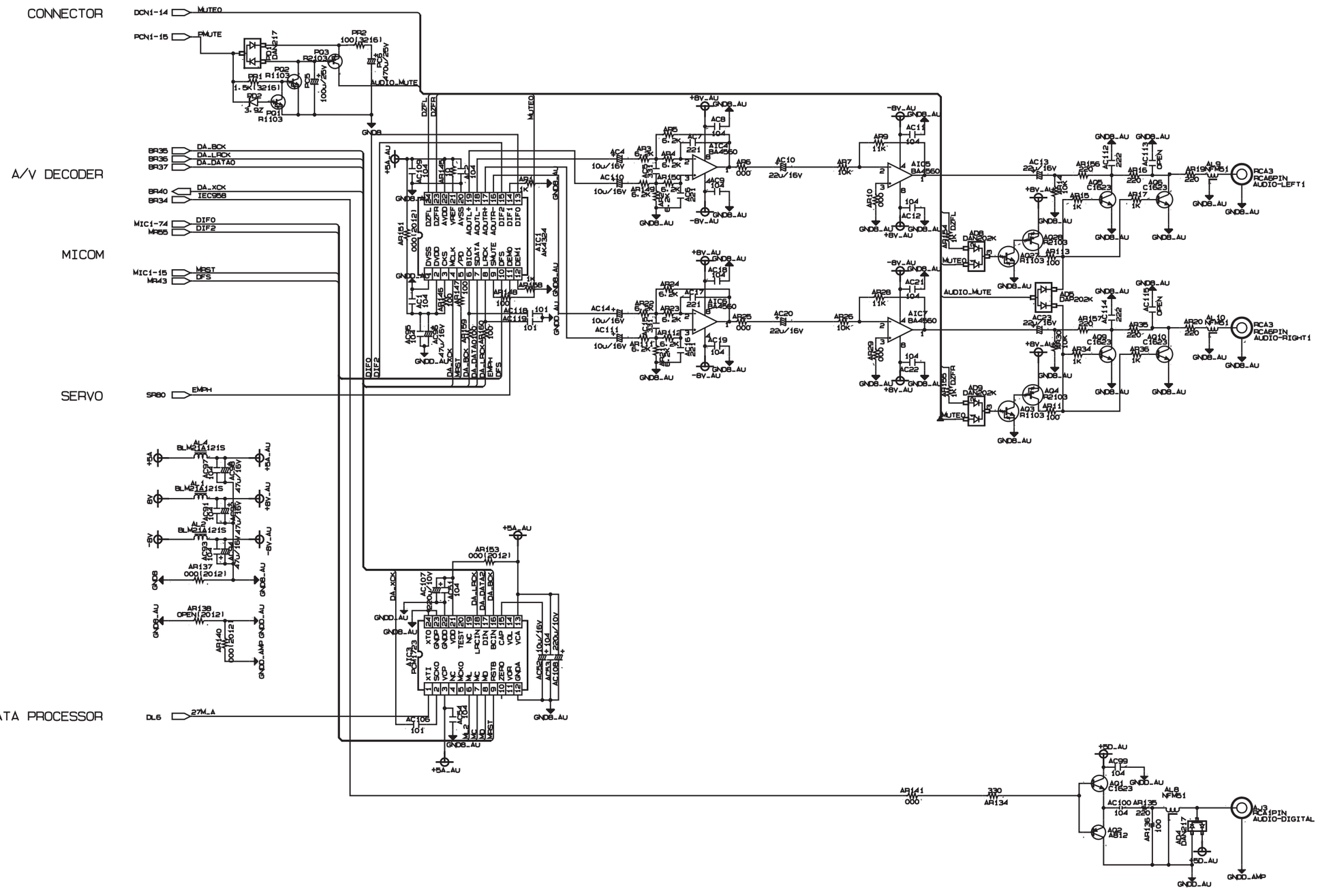
15-5-4 A/V DECODER



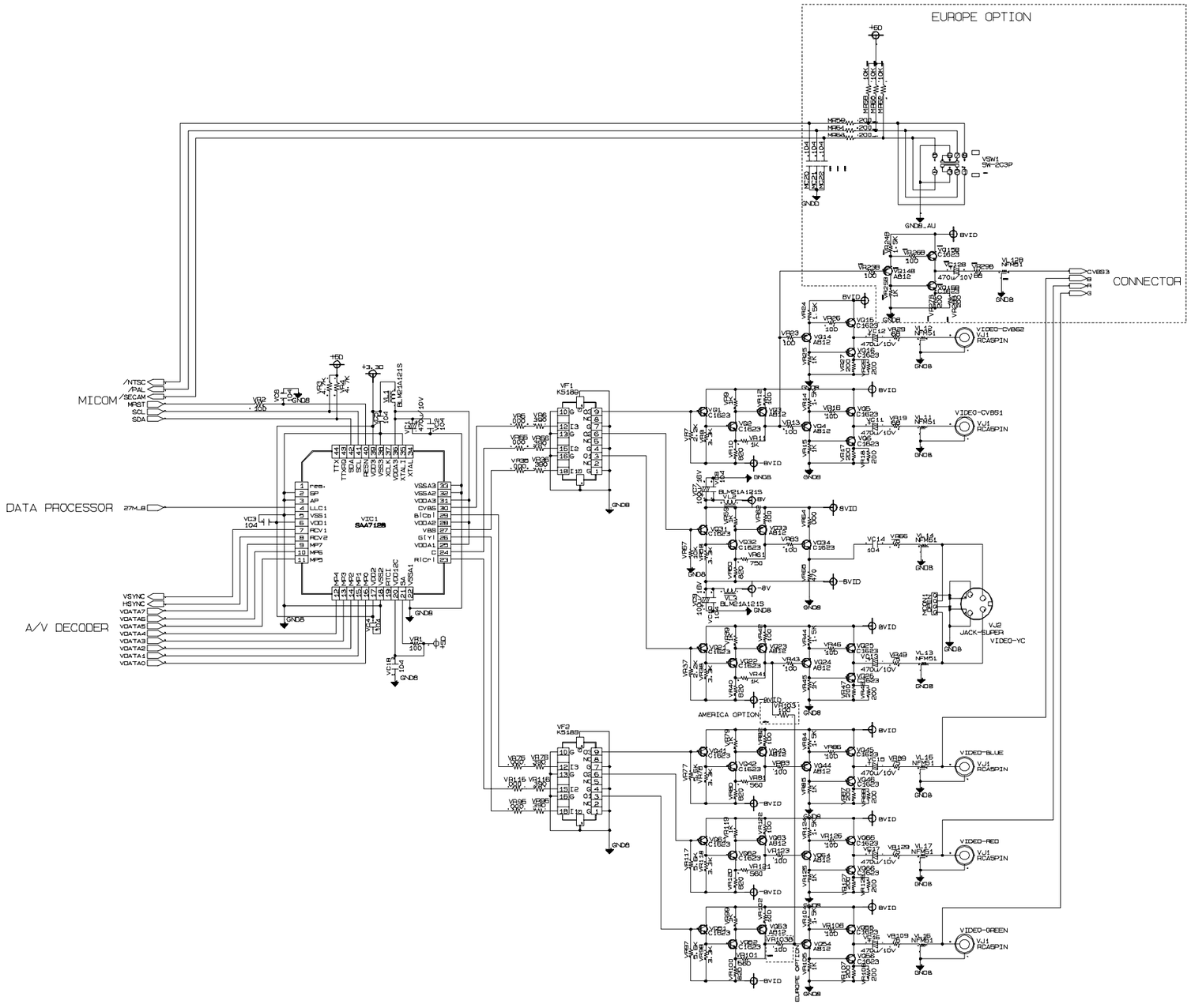
15-5-5-1 AUDIO (DVD-907/927)



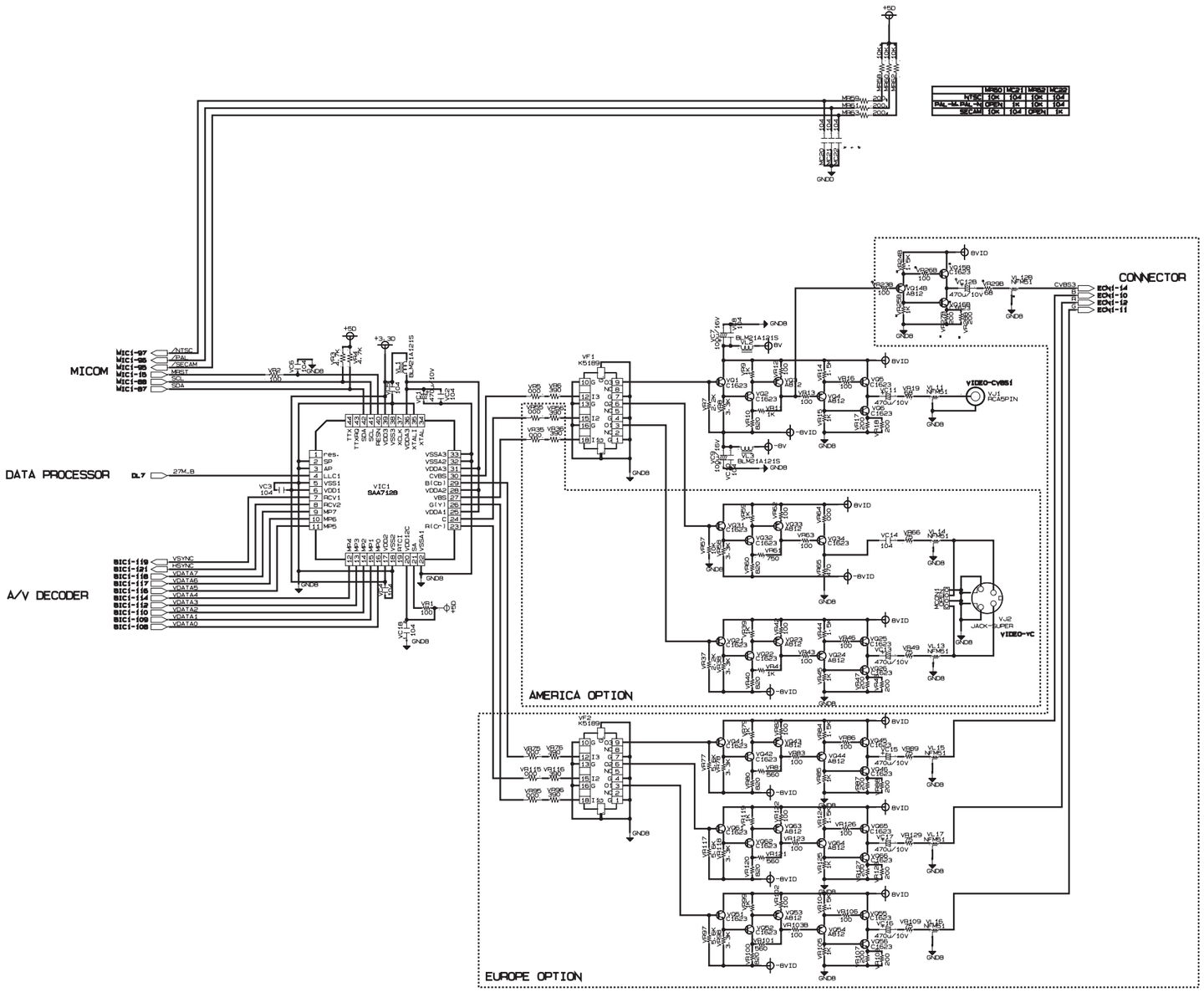
15-5-5-2 AUDIO (DVD-807/707)



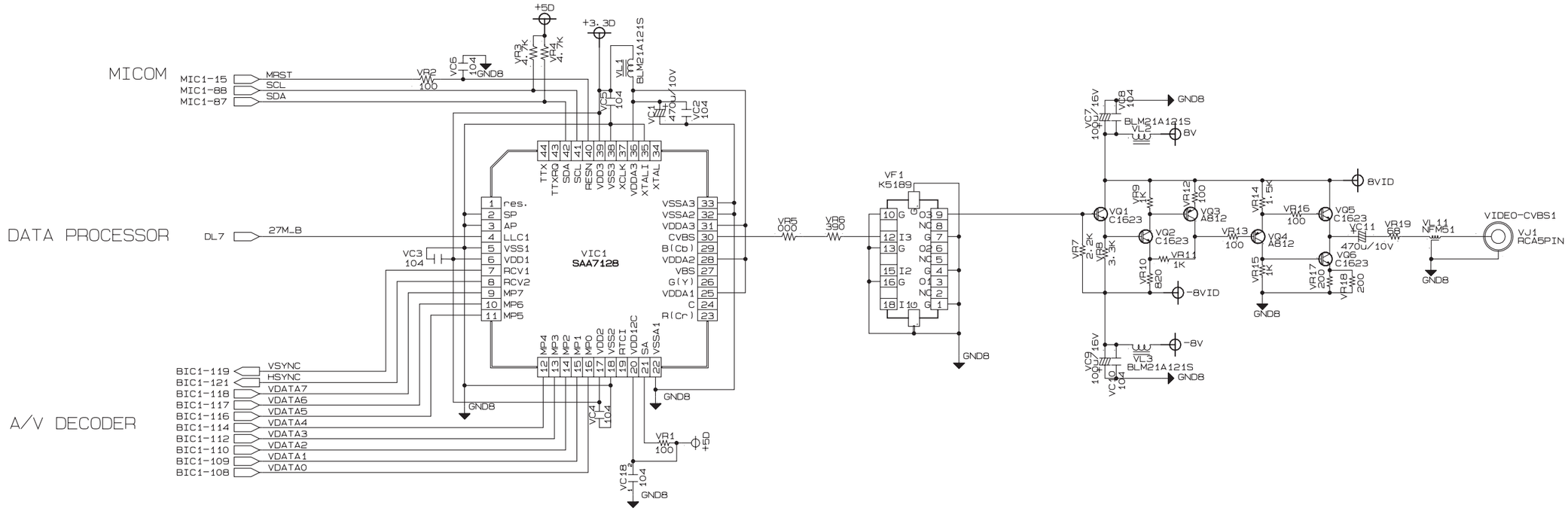
15-5-6-1 VIDEO (DVD-907/927)



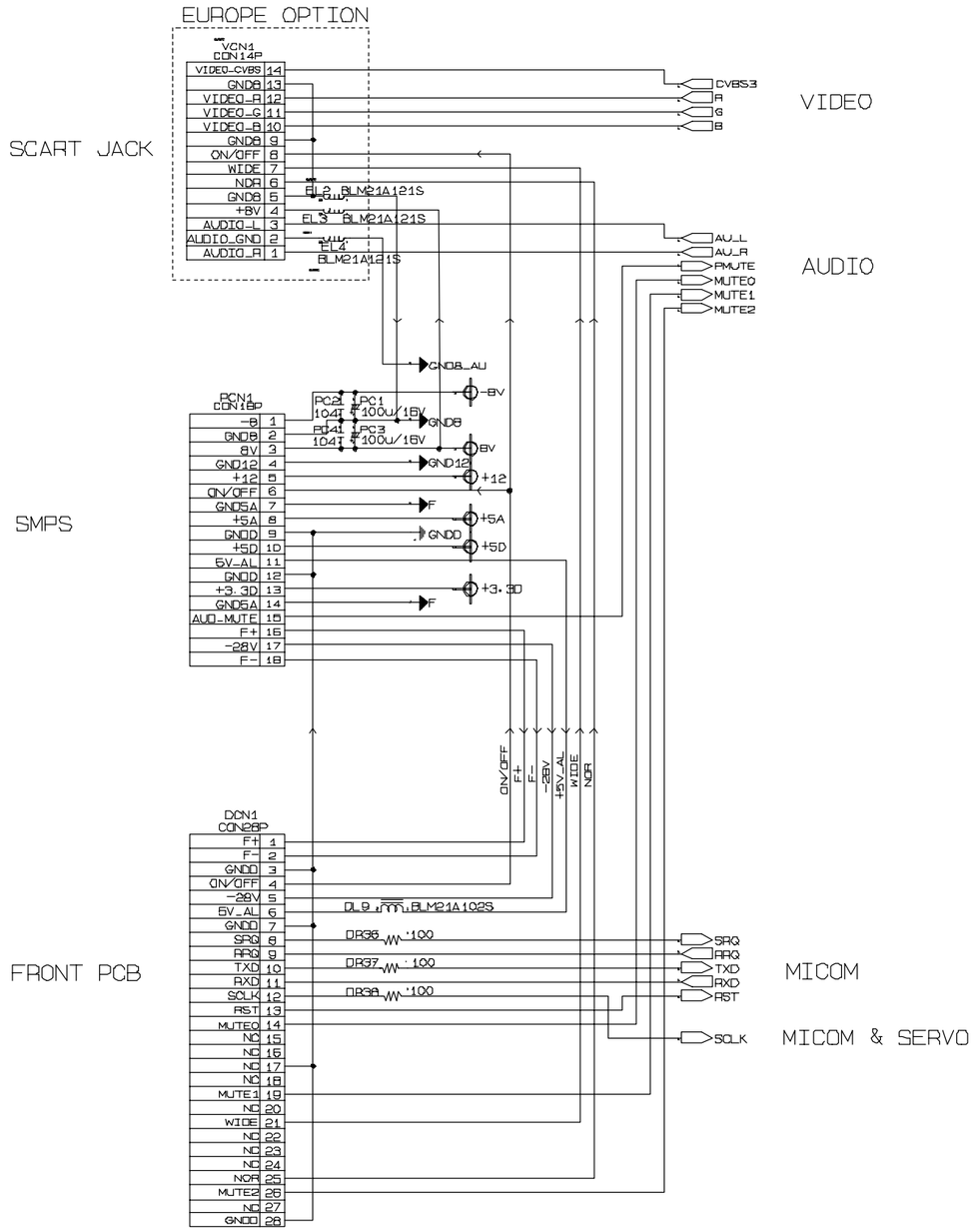
15-5-6-2 VIDEO (DVD-807)

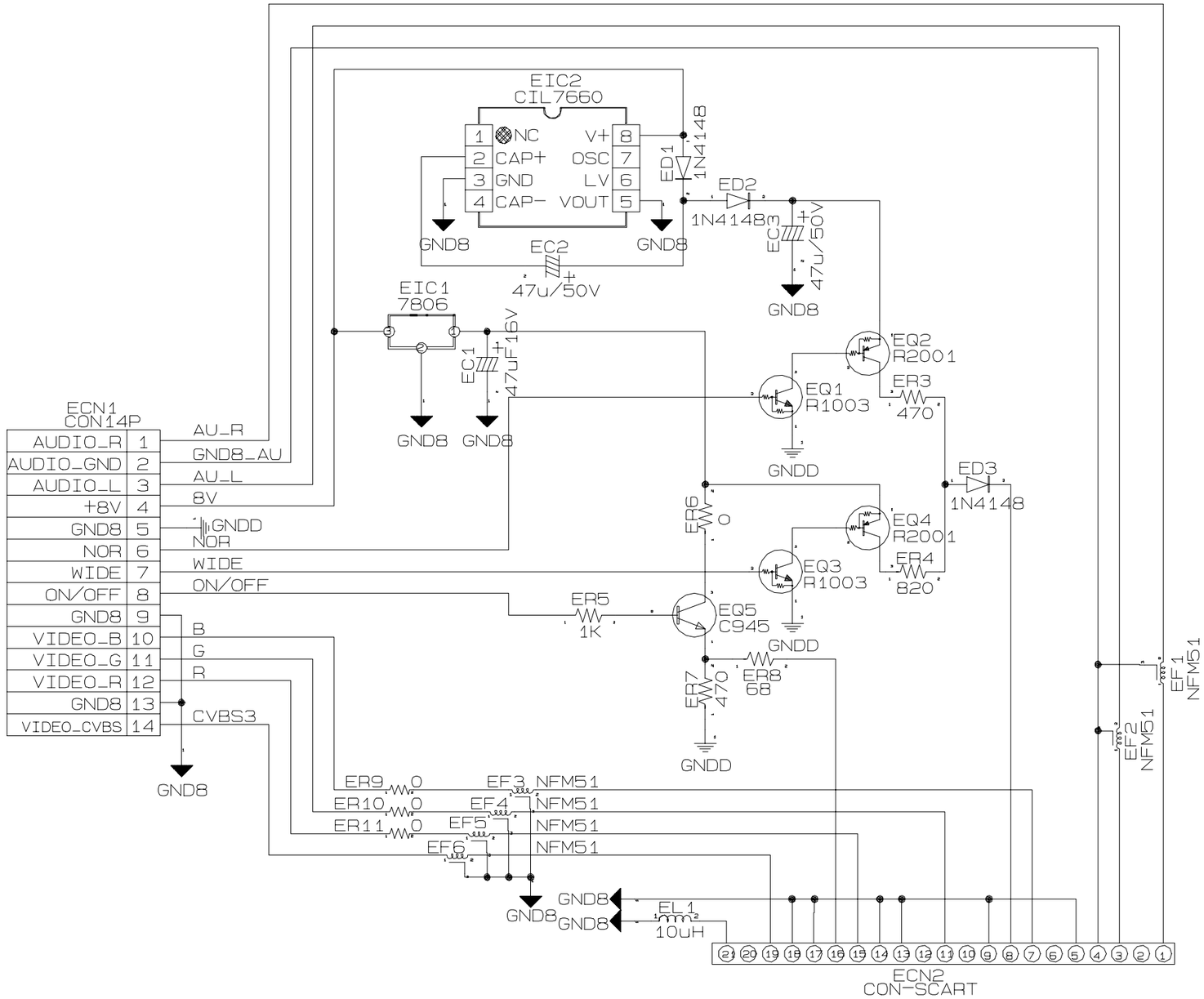


15-5-6-3 VIDEO (DVD-707)



15-5-7 CONNCTOR




EIC2
CIL7660
1 NC
2 CAP+
3 GND
4 CAP-
8 V+
7 OSC
6 LV
5 VOUT
ED1
1N4148
ED2
1N4148
EC3
47u/50V
GND8
EC2
47u/50V
EIC1
7806
EC1
47uF16V
EQ2
R2001
EQ1
R1003
ER3
470
GNDD
ED3
1N4148
ER6
0
EQ4
R2001
EQ3
R1003
ER4
820
ER5
1K
EQ5
C945
ER7
470
ER8
68
EF1
NFM51
EF2
NFM51
ECN1
CON14P
AUDIO_R 1
AUDIO_GND 2
AUDIO_L 3
+8V 4
GND8 5
NOR 6
WIDE 7
ON/OFF 8
GND8 9
VIDEO_B 10
VIDEO_G 11
VIDEO_R 12
GND8 13
VIDEO_CVBS 14
AU_R
GND8_AU
AU_L
8V
GNDD
NOR
WIDE
ON/OFF
B
G
R
CVBS3
ER9 0
ER10 0
ER11 0
EF3 NFM51
EF4 NFM51
EF5 NFM51
EF6 NFM51
EL1
10uH
ECN2
CON-SCART